

May 1941

# TECHNOLOGY REVIEW

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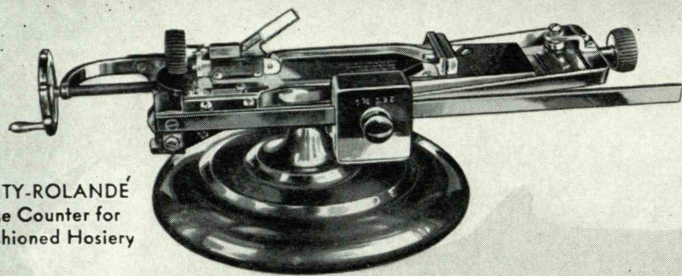
# technology review

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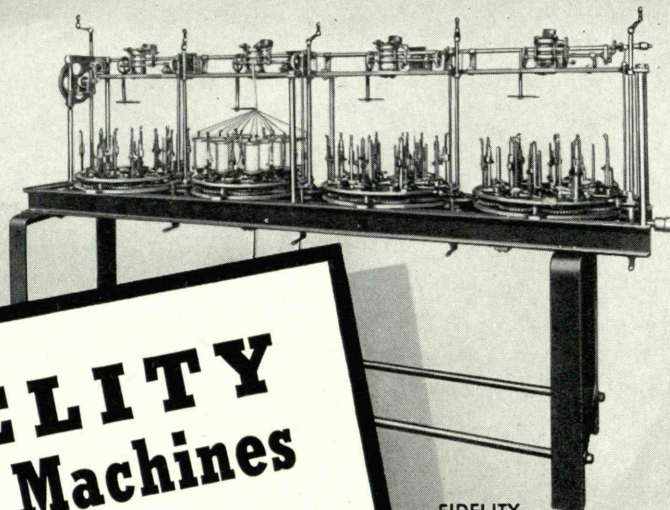
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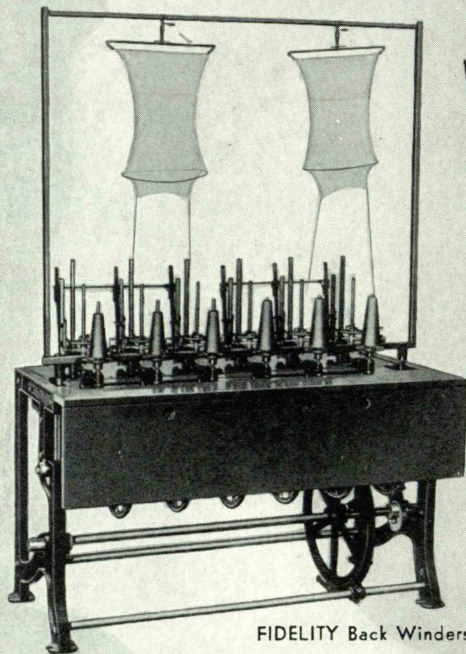
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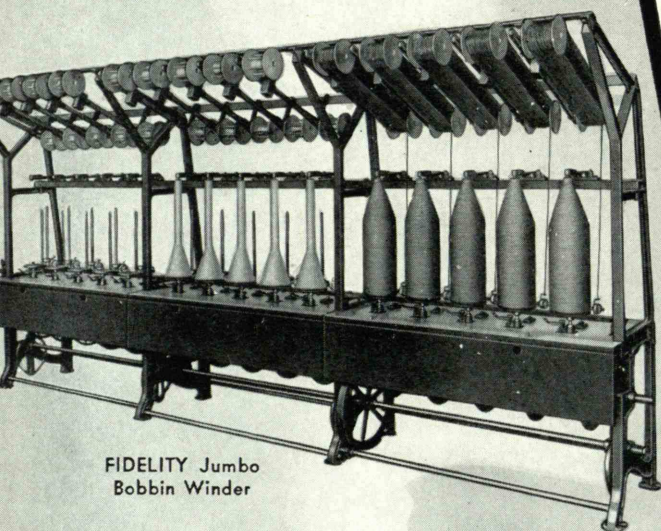
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Machines



FIDELITY Back Winders



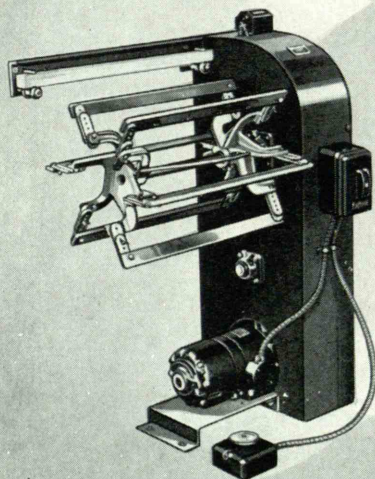
FIDELITY Jumbo  
Bobbin Winder



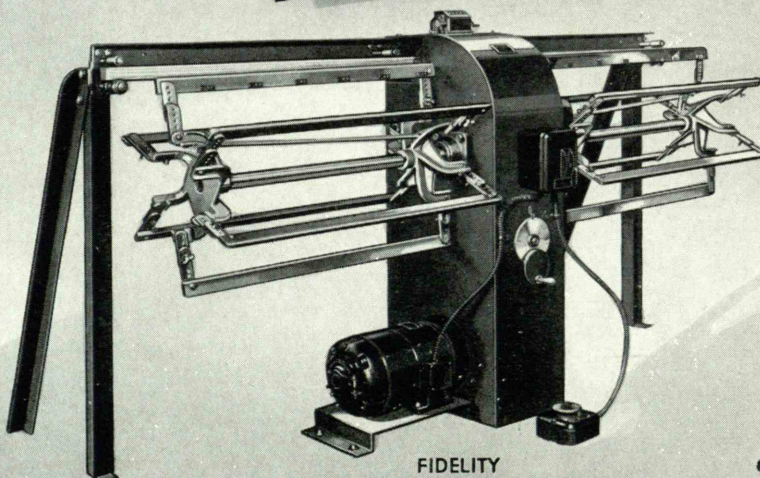
FIDELITY  
Pocket Edge  
Folding Machine



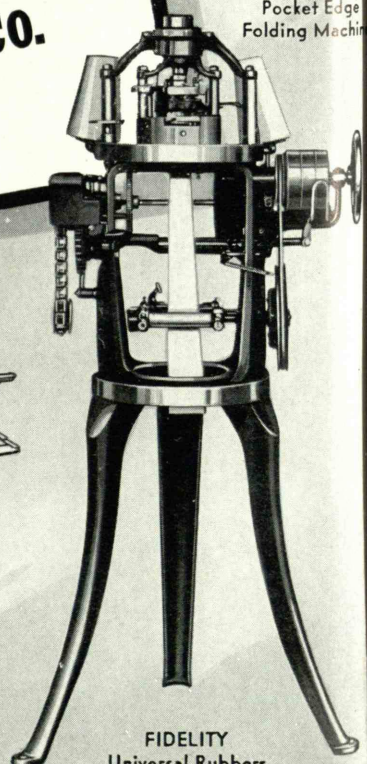
FIDELITY  
Single-End Skein Reeler



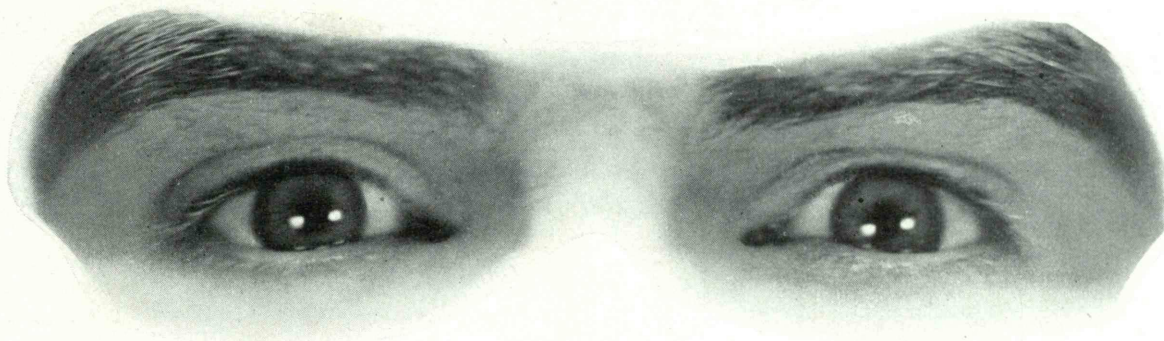
FIDELITY  
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FIDELITY  
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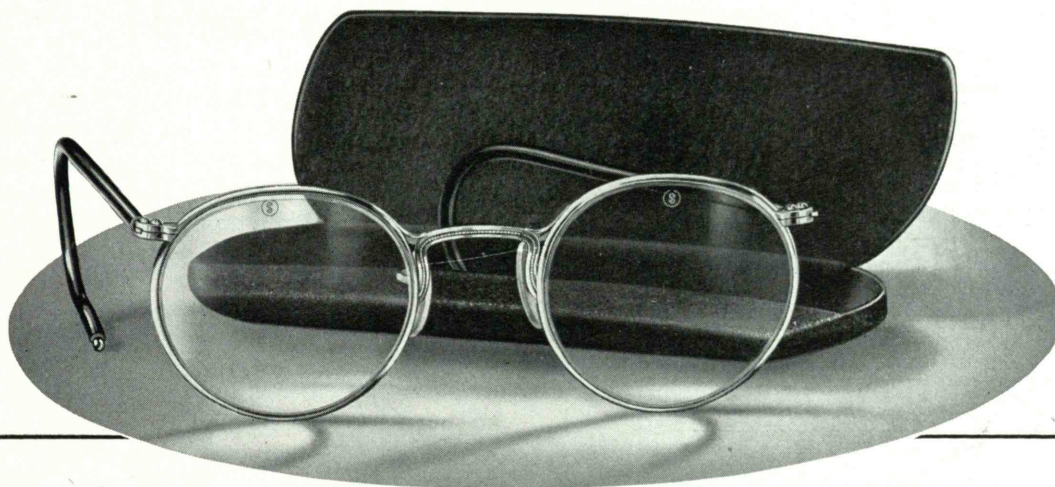






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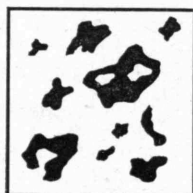


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## THE TABULAR VIEW

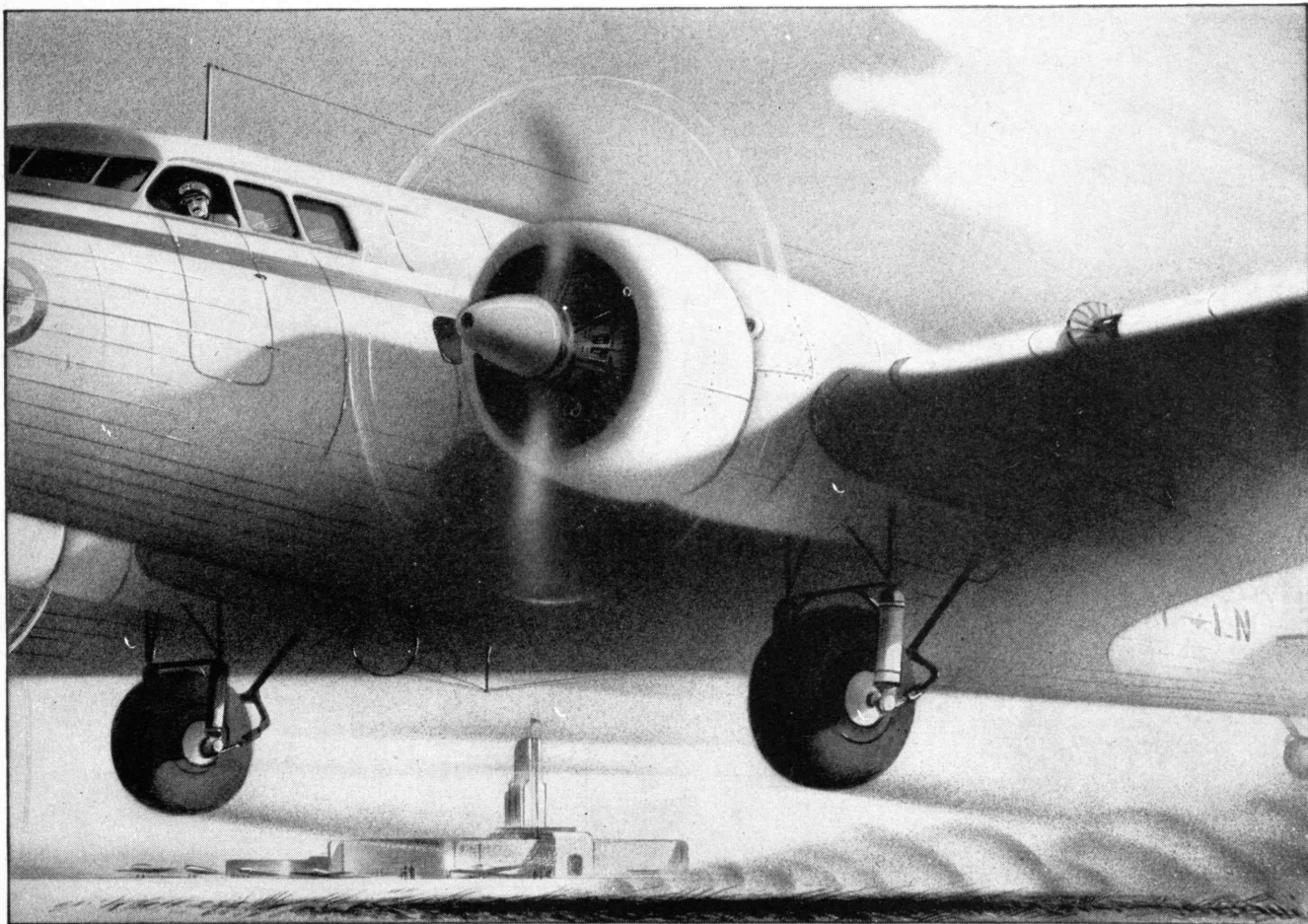
**Curare Cure.** — To bring the unruly into useful order is no small part of the function of science, expressed in hundreds of different fields, conspicuous among which is that of medicine. Here known techniques, predictable therapies, reliable drugs, and other agents have been provided by scientific research to sustain the skill of the practitioner in his efforts to insure mankind against disease. This constantly continuing endeavor of science has only in comparatively recent years come much before the general eye, and still the drama and the inspiration which such endeavor affords yield place too often to the more spectacular appropriating of science for less desirable ends. Much interest therefore attaches to RICHARD C. GILL's account (page 297) of the taming of the jungle arrow poison, curare, which during the past few years has been converted from a mysterious and undependable witch doctor's brew to a predictable and highly useful physician's medicament. A graduate of Cornell, Mr. Gill was for a time a member of the faculty of Lafayette College. Thereafter he was in commercial foreign service in South America, where in 1929 he acquired a ranch in the eastern sub-Andes which he has since used as a permanent expeditionary base for his own work and that of others with bona fide interests in exploration and investigation. Starting with general ethnographic surveys of the region, Mr. Gill became specifically interested in primitive Amazonian *materia medica*, out of which grew his work on curare.

**Mercury.** — Stone breaker in Australia, timber cruiser in Canada, copper miner in Arizona, RICHARD HALLET has included also in a crowded life intervals at sea as seaman on a British bark, fireman on a British mail packet, and watch officer on a United States Army cargo transport carrying horses to France in the days of the first World War. Hence he writes of destroyers (page 299) with the comprehension of ships and men which is attainable only through varied experience, and with the reflectiveness about states and systems which is to be had only from retrospect on such experience.

**Boost.** — Speed and more speed and how to get it constitute a problem generally in the fore of aeronautical minds. The physical limits imposed on what can be attained by one means must be offset, if possible, by resort to some other means. On this front, then, the engineering experimenter is seeking ways to supplement by unusual techniques the standard approaches to his problem. This critical business is canvassed for The Review (page 302) by PAUL COHEN, '35, Editorial Associate, able editor of *The Tech* in years past, and frequent contributor of shrewd analyses to The Review in years current.

**Antique Artisans.** — From his explorations of technology's past, LEROY L. THWING, '03, has returned before to The Review with anecdote, legend, and history — most recently in Decem- (Concluded on page 326)





## WHERE "GOOD ENOUGH" WON'T DO

There are no "unimportant" parts in an airplane engine. Efficiency and dependability demand perfect performance all along the line. Consequently the only standard for selecting materials should be ability to meet the requirements.

Nickel-Chromium-Molybdenum and Nickel-Molybdenum oil hardening steels are being chosen for many engine parts such as crank shafts, pins and accessory gears because of their demonstrated capacity for doing their jobs. Not only do they develop

the necessary strength and toughness, but also the requisite hardness, and they machine in the fully heat treated condition.

Thus they give the engine manufacturer confidence in the performance of the parts and help keep his production costs within reasonable limits.

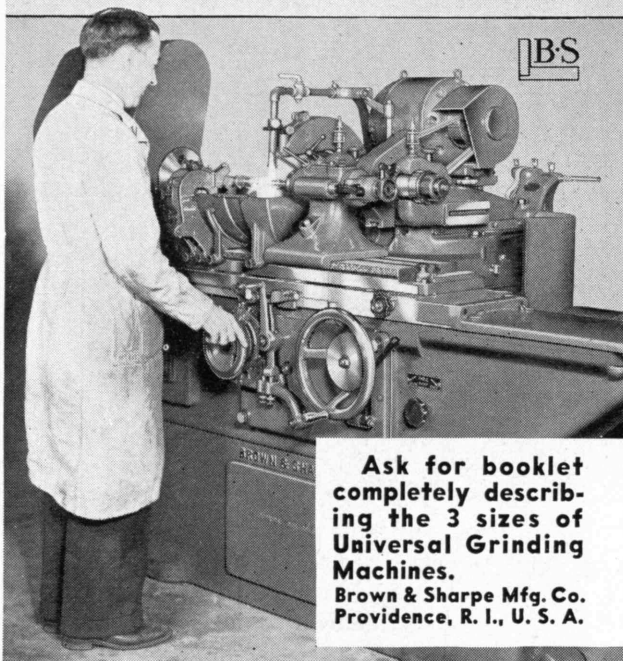
Our booklet, "Molybdenum in Steel", which contains a great deal of practical data, will be gladly sent free on request to technical students and others interested in improved materials.

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## MAIL RETURNS

### *Industrial Economics*

FROM B. EDWIN HUTCHINSON, '09:

. . . I want to speak very highly of an article in the March Review by Henry M. Wriston on "The Worth of the Initiative." In a not too indirect way the thoughts in this article, in my opinion, bear on the subject of the Institute's prospective activity in the field of industrial economics. I have a feeling that our industrial techniques have far outstripped the development of our economic philosophy. I find myself groping to suggest some method which might bring the potential resources of the Institute to bear more directly on this larger problem. . . .

Detroit, Mich.

### *Teaching Fire Control*

FROM FRANK L. AHERN, '14:

I have read with interest in the March issue of The Review the article, "Sir Thomas Gresham's Picture," by John E. Burchard, '23, discussing the effects of fires on cities. . . .

In my article, "Safety Is Good Management," in the March, 1940, issue of The Review, you will recall that I placed some emphasis on the suggestion that the fundamentals of fire protection and safety be included in engineering and architectural courses. It is a satisfaction to report that a course in fire protection engineering is now being given at George Washington University in connection with the Engineering Defense Training Program sponsored by the United States Office of Education.

Washington, D. C.

### *Small Arms for Industry*

FROM ROBERT H. JOHNSON, '26:

The editorial, "Small Arms for Industry," on page 241 of your April issue is very interesting. May I inquire from what source you obtained the figure of \$20,000,000 as the volume of portable-tool business for 1937? As far as I know, accurate figures are unavailable, since a large section of the portable-tool industry makes no reports on volume of sales. [The Review's figure was based on Bureau of the Census statistics for 1937. — Ed.]

You refer to the use of portable tools in the construction of battle-ships, locomotives, and airplanes, and go on to say: "A husky miner pounding at rock with a steel and a hand hammer can bore little more than five to ten feet of hole during an eight-hour day, whereas a modern pneumatic drill during the same time can penetrate 100 to 150 feet of rock." Yet you state later that the typical tool is driven by a high-speed universal motor through reduction gearing. In the applications to which you refer and in the various forms of hand tools which you list, a large percentage of the machines are hammers. In almost every instance they are operated by compressed air. In addition to these percussion-type machines, many of the rotating tools . . . are air operated. One can therefore hardly say that the typical tool is driven by a high-speed universal motor. The typical tool in the industries you mention is, I believe, air operated.

In the fifth paragraph you mention certain circumstances under which the power-driven tool is not only faster but better. You say: "When supplied with an adjustable clutch, a nut runner will set nuts to within 10 per cent of a predetermined tension, much closer than can be expected of handwork." A pneumatic tool without an adjustable clutch will accomplish this result when supplied with reasonably uniform air pressure, corresponding to reasonably uniform voltage for an electric tool. Moreover, the air tool does not require an engaging clutch when repetitive operations make necessary several engagements of a screw-driver bit or chuck in rapid succession. In this circumstance the electric machine would require not only an adjustable clutch but also an engaging clutch, because the inertia of the motor would cause the screw-driver bit or chuck to continue to spin for an appreciable time after disengagement, making it impossible to start another operation instantly. . . .

In general, not any known method of power transmission commercially available to an industrial plant will give, in proportion to power, the light weight and small size that compressed air gives. . . . Pelham, N. Y.

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## help produce machines and machine tools

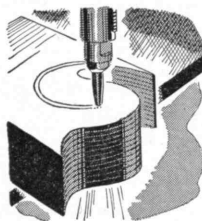
● The production of machinery and machine tools of every type can be speeded up, costs can be reduced, and results improved, by using one or more of the many processes which Linde has made available. Some of these Linde processes are outlined at the right.

Linde can supply everything you need to use these and other related processes—oxygen, acetylene, carbide, and the necessary apparatus. By buying from Linde, you can centralize your source of supply—can effect savings in materials handling, book-keeping, and parts inventories. Equally as important, Linde Process Service can offer on-the-job assistance to help you use these and other Linde processes profitably. For the full story, write any Linde office.



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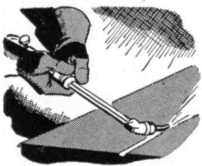
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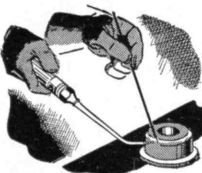
**Flame-Cutting**—Oxy-acetylene machine flame-cutting produces finished or semi-finished steel parts of almost any size, shape or thickness—rapidly and economically. Flame-cut parts, when joined by welding, make possible substantial savings in weight and bulk. In addition, flame-cutting simplifies design changes—enables manufacturers to hold down parts inventories—lessens dependence on outside sources of supply—minimizes machining time and expense—and makes one-of-a-kind production economically practical.



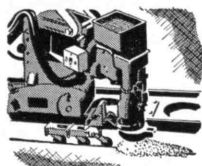
**Flame-Hardening**—Linde has developed dependable methods for flame-hardening dies, gears, lathe ways and other machine parts. A carefully controlled surface case can be imparted without affecting the composition or ductility of the base metal. Linde Process Service can help you obtain uniformly good results.



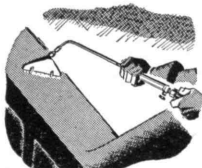
**Gouging**—This relatively new Linde process removes surface metal without harm to adjacent areas. It is used to gouge out faulty or temporary welds—to correct defects in forgings or castings—to provide clearance for moving parts—and to prepare plate-edges for welded fabrication.



**Hard-Facing**—To make wearing parts last longer, Haynes Stellite hard-facing materials can be most effectively applied by the oxy-acetylene welding flame.



**Unionmelt Welding**—This remarkable electric process—available only from Linde—automatically joins metal of practically any commercially used thickness, in one pass and at extremely high speeds. This process offers interesting possibilities in the fabrication of machine bases.



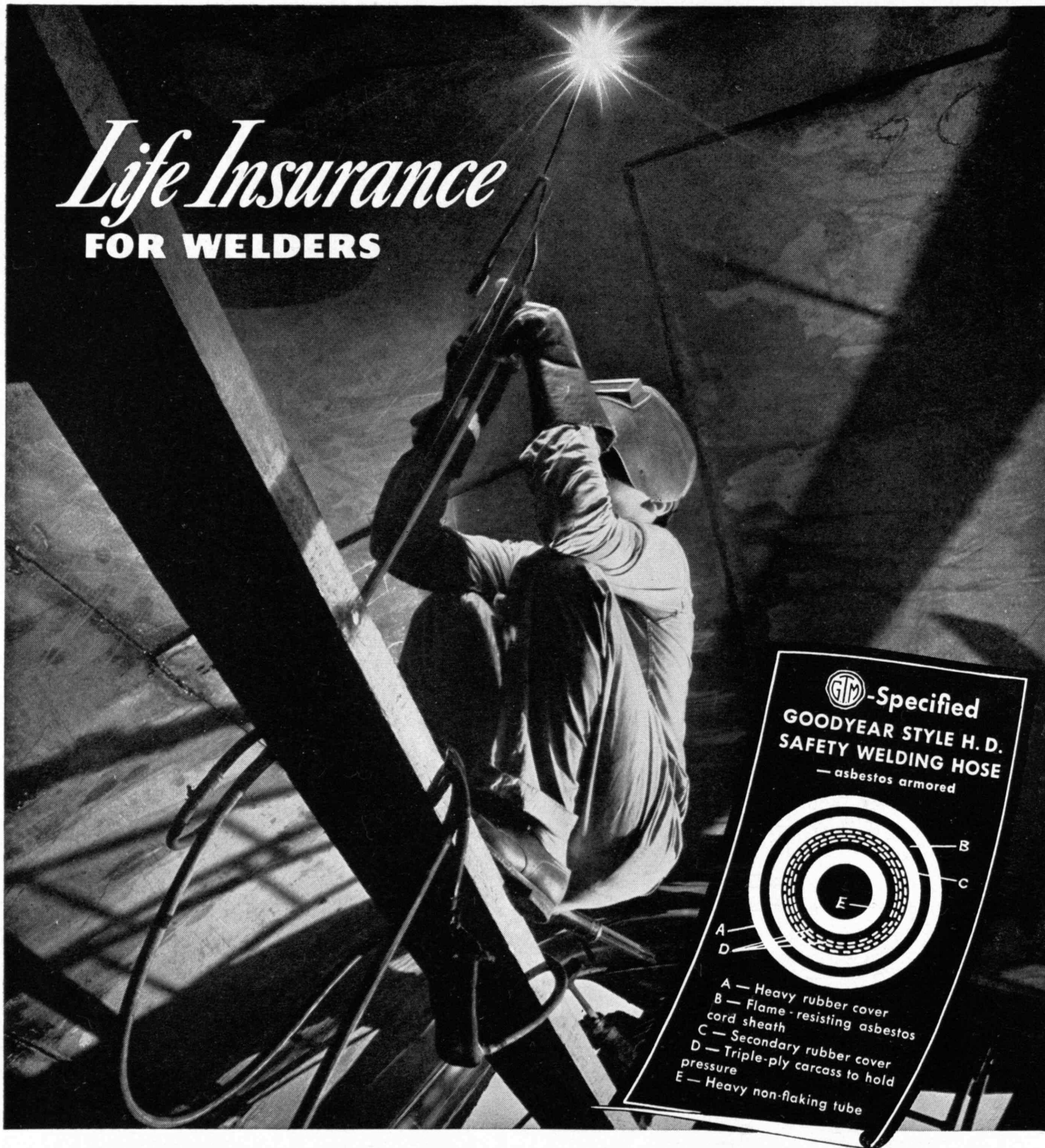
**Descaling**—Structural steel, annealed forgings or castings, and other parts can be rapidly freed from scale by Linde's flame-descaling apparatus. Flame-cleaning is a similar application of the process which drives out occluded moisture, and prepares steel for a more lasting paint job.

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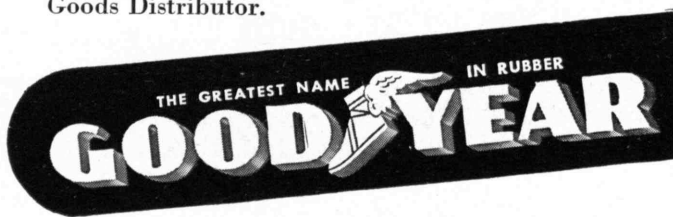


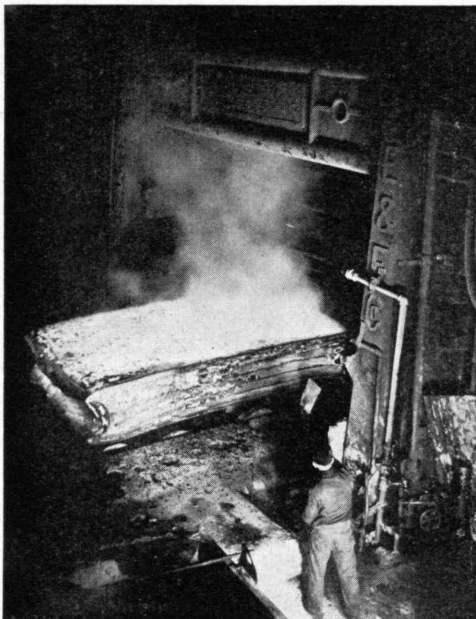
# Life Insurance FOR WELDERS



**W**ELDING in close quarters has long been one of the more dangerous jobs in industry. Should the incandescent metal-fusing flame accidentally hit the gas-feeding rubber hose lines, they burn through instantly — *and wham!* Explosions have put many a welder on the casualty list. But fortunately, this peril has now been practically eliminated by the G.T.M. — *Goodyear Technical Man*. Seeking a way to protect welding hose against flame while keeping the flexibility required for work in narrow confines, Goodyear technicians hit upon asbestos. A special, heavy asbestos cord was developed that could be woven into hose plies like ordinary cotton cord, and Goodyear Style H.D. Safety Welding Hose was born. Its asbestos armor prevents burning through from

accidental contact with the torch or gobs of molten metal. It saves welders' lives — *because it has a ten times higher safety factor than conventional hose!* Goodyear now builds many types of asbestos-bodied hose for operations where intense heat must be endured. To consult the G.T.M. about them, write Goodyear, Akron, Ohio or Los Angeles, California — or phone the nearest Goodyear Mechanical Rubber Goods Distributor.





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VOLUME 43

NUMBER 7

# THE TECHNOLOGY REVIEW

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AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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From a photograph by Carl A. Segerstrom, Jr., '39

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# THE TECHNOLOGY REVIEW

Vol. 43, No. 7



May, 1941

## The Trend of Affairs

### Hot Stuff

**E**IGHTEEN months ago a group of 800 scientists met under the auspices of the American Institute of Physics to hear 125 assorted papers on heat. The men were generally learned, the papers usually abstruse. Now the papers appear in a volume of many pages and many pounds, called *Temperature*.<sup>\*</sup> For the Editors of *The Review* to attempt to understand all or even much of what is said on those pages is futile; to attempt an interpretation, foolhardy. The tome has an amazing amount of human interest, and to that aspect we may address ourselves.

Temperature has a long and honorable past in the history of science. Fire was one of the Aristotelian elements, but perhaps the scientific history of heat began when Count Rumford made quantitative measurements while boring the King of Bavaria's cannon. Since that day, names of those who have had to do with heat would include nearly every shining light in the galaxy of science. Helmholtz, Carnot, Kelvin, Joule, Regnault, Rankine, Gay-Lussac, Boyle, Berthelot, Kirchhoff, spring easily to mind.

But in spite of all the attention which has been paid to the subject, science apparently has not yet taken a really firm position with respect to temperature. It might encourage the belabored social scientist to hear the men of

this symposium questioning the reliability of their physical constants. Certainly the student of language will be pleased to learn

that the American Standards Association has under way a project for the standardization of letter symbols for heat and thermodynamics (its expositor remarked plaintively, "... Let us visualize the millennium when all technical authors are tame. ..."). Finally, and most exhilarating, might be the statement by one of the attendants that the "mathematical physicist resents basing some of the fundamental laws of physics upon a sensation — warmth versus coldness in the skin of a man."

Measurements of the heat itself constitute a first base. There are so many methods and so many instruments for arriving at quantitative values that one hesitates to embark on an enumeration. Contact methods include those which rely on the expansion of test bodies (solid, liquid, or gas), on thermoelectric junctions, on electric resistance, on radiation from the test body in gas, on change of state of a test body, on calorimeter pyrometers, on suction pyrometers, and on methods for which additional heat is supplied. Among noncontact methods are blackbody-radiation measurements of various types, including optical and photo-electric pieces of apparatus.

That which is measured is, however, of considerably more interest than how it is measured. The present gamut of temperature measurements is very large, although in one of the places most important to practically all of us it is very small indeed. As Dr. Eugene F. du Bois has reminded us, man really lives not in the air but inside his own skin. Inside that skin the variation of temperature is not great. On a cold day the variation might be as much as 8 degrees Fahrenheit from the liver to the skin. Across a day the temperature at the same point might normally vary by less than 2 degrees Fahrenheit, but 2.7 degrees Fahrenheit can be gained in a hurry by playing squash. Emotion and age will affect the body temperature, too, but not to such a great

◀ "Night Scene," by the late John Skara, examples of whose work *The Review* has presented in the past. Thanks to W. C. West, '11, and the Chicago Camera Club, others of Mr. Skara's prints are to be published in the future.

<sup>\*</sup>New York: Reinhold Publishing Corporation, 1941. xiii and 1,362 pages. \$11.



extent; and it is apparently not true that women on the average have higher body temperatures than men have.

All these facts and many more which we shall also painstakingly lay before the reader are drawn from the symposium papers which deal with body temperature. Twenty-two out of the total of 125 consider this subject. The statements are based on large numbers of measurements of body temperatures made under closely controlled conditions which insisted on standardization of the time since the last meal, the posture, the environment, the length of time the thermometer had been inserted before the reading.

Although the body temperature ordinarily is quite steady, it is a matter of great concern to many people. Again quoting Dr. du Bois: "Many people do not merely own clinical thermometers, but worship them, and particularly do they worship the little arrow, guiding the activities of the family by this fetish." Yet people can attain temperatures which would break the family thermometer at either end. A man may have a bodily temperature about as low as 75 degrees Fahrenheit or about as high as 113 degrees, and yet live.

He can, of course, do much better than that as to the temperature of the environment in which he can live. He can live in Verkhoyansk in Siberia, which has the lowest recorded temperature,  $-90.4$  degrees Fahrenheit (though there are some less sure claims for Mount McKinley at  $-100$  degrees); and he can live in Tripoli when the day is 136 degrees Fahrenheit (only 2 degrees higher, incidentally, than the best record in the United States, made in Death Valley).

The evidence of the symposium on the subject of climate may re-assure more than one gaffer who, like your Editors, has gone around recalling the deep drifts formed by the swirling snows of yesteryear. The days are actually getting warmer. The long-time trend is definitely up, and the trend is world wide. Seventeen of the last twenty years in Portland, Ore., for example, have been warmer than the long-time average; nineteen of twenty in Cape Town, South Africa, have shown the same result. In New Haven, Conn., which is typical, the average fall build-up has been from  $51\frac{1}{2}$  degrees Fahrenheit in 1860 to 54 in 1936. But an individual does not really have to get off the familiar earth or even go to places where man could not go if he wanted to,

before temperatures are likely to get too low or too high to be good for him. Fumaroles, for example, show heats of 230 degrees Fahrenheit to 1,500. It is hard to measure the temperature of lava surfaces, as optical methods are affected by dust, but one such report gives 1,904 degrees Fahrenheit for the temperature. On the other hand, radiosondes, parachuted from the upper air from balloons, may show the temperature aloft to be  $-76$  degrees Fahrenheit at a pressure of 100 millibars, while directly below at a pressure of 950 millibars the temperature may be 64.

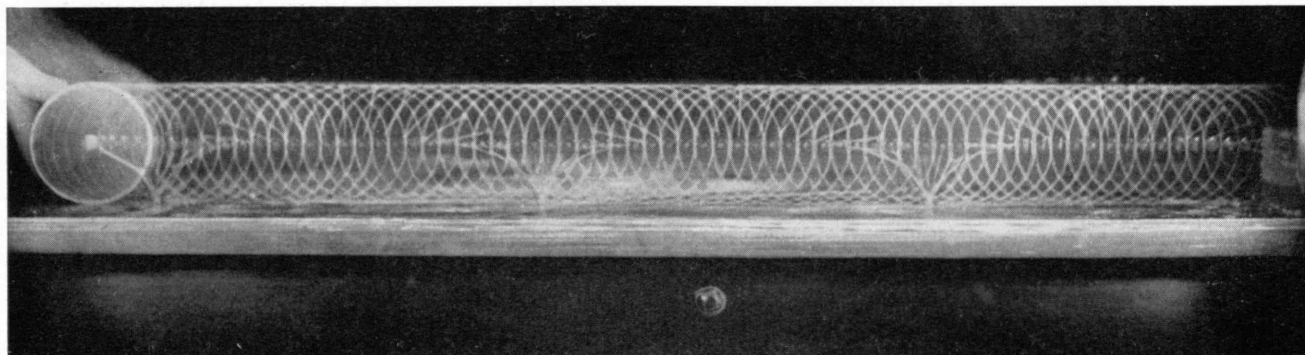
If you want things colder than that, it is best to go to the planets. The man who survived a winter at Verkhoyansk might do all right on Mars, which is about freezing at its equator,  $-94$  degrees Fahrenheit at the polar caps by day, and averages  $-76$  by night. But he would probably quail at Jupiter, Saturn, and Uranus, which measure  $-211$  degrees Fahrenheit,  $-238$ , and  $-301$  in that order. The moon is a testing place, for it boils by day and reaches  $-238$  degrees Fahrenheit by night. Of course man improves on that lower temperature when he liquefies hydrogen or helium.

Man also does well with high temperatures, though he may not compete with the sun. Thus he has readily produced temperatures which melt gold (1,945 degrees Fahrenheit), beryllium (2,336), tungsten (6,170), or carbon (6,692). Neat devices for reaching high temperatures without alteration of pressure are afforded by such gadgets as Straubel's solar furnace at the Zeiss Works in Jena. A heliostat with a 100-inch searchlight mirror focused on a  $5/16$ -inch spot yields a temperature of 5,400 degrees Fahrenheit. Other ways of producing great heat are electron bombardment or the explosion of wires by the process of discharging condensers through very thin filaments.

The effects of temperatures on life are among the most interesting matters reported in the symposium papers. Differences in temperature can have substantial influence on such disparate things as the respiration of seedlings, the heartbeat frequency of a cat, the motions of a paramecium, the death rate of *Bacterium typhosus* in mercury chloride, or the pupal development of the meal worm.

A good deal of debate has centered about reproduction rhythm, which appears sometimes to be affected by temperature rhythm but more often by sun rhythm or

*Recalling the penmanship exercises of years past, this end view of a cylinder rolling along a plane is another of the teaching pictures developed at Technology by Harold E. Edgerton, '27, Associate Professor of Electrical Measurements, and Francis W. Sears, '20, Associate Professor of Physics, for use in the teaching of physics. In the successive-flash photographs, the radius painted on the end of the cylinder is seen to describe a cycloid.*



diet. Fish undoubtedly migrate because of changes in temperature, but birds, which need a long feeding day, are perhaps more influenced by the course of the sun. Finally, though cold weather — at least down to zero — will not affect the milk yield from cattle, high temperatures will reduce the milk a great deal and the casein content appreciably. This fact poses a neat problem because it is very hard to cool a cow, which happens to be a nonsweating animal. Did you know that?

Of course, all the papers did not deal with such things. A substantial amount of the symposium was devoted to the discussion of control of temperature. Controls are the tools of production, as measuring devices are the instruments of research. The book contains interesting discussions of high-speed measurements of temperature in oil refining, of the control and measurement of temperature under a microscope. The uses of control are countless: in refrigerator cars, the food industry, stokers, steam turbines, plastic molding, massive concrete structures, aircraft, liquid metals, incandescent lamps, petroleum production including thermal prospecting. In medicine are the fever cures of gonococcus and spirochete infections and the experiments in the cold treatment of cancer. The book as a whole is a convincing demonstration that Prometheus has been bound.

A CONTEMPORARY book of almost as much volume and weight may serve as antithesis, for in it one finds the furies of Prometheus out of control. The Crosby-Fiske-Forster *Handbook of Fire Protection* \* also has its human interest in addition to its many useful tables. Here one can find that the annual fire loss in the United States averages \$300,000,000; that dwellings account for 390,000 out of 660,000 fires; that practically half of all deaths by fire occur to children and old people. Of those who burn to death, about 25 per cent are trapped in burning buildings; no other cause is very important, but hanging around aircraft or fixing the furnace in loose clothes may result in disaster. Though "smoking and matches" are the largest single fire cause, they do not result in many fatalities, and a large number of people will be relieved that smoking in bed is not a very important source of trouble. Similarly, the

\* Boston: National Fire Protection Association, ninth edition, 1941. xxiv and 1,308 pages. \$4.50.

*Rolling down an inclined plane, this cylinder photographed end-on by Edgerton and Sears provides visual answer to the question of whether the rim of the locomotive wheel travels faster than the locomotive. It does, in the ratio of two to one, at the top of its revolution, and slower in the same ratio at the bottom, as inspection of the relative positions of the painted radius, rim spot, and center in successive pictures will show.*

old theory of "rats and matches" is apparently debunked, for rats will starve before they will chew a match head.

In addition to the expected sources of fire, such as cigarettes, oil storage, chimney sparks, and lightning, the sun often plays tricks. It focuses through glass paperweights, fish bowls, or even lenses formed by bubbles in window glasses, and presto! the blaze is on. Incidentally, the lightning hazard need not scare you much if you live in New England or New York, which have averaged twenty to thirty days of thunderstorms a year for the last thirty years. But look out in New Mexico, which runs to sixty-seven such days, and especially in part of Florida, where ninety-three days are the rule.

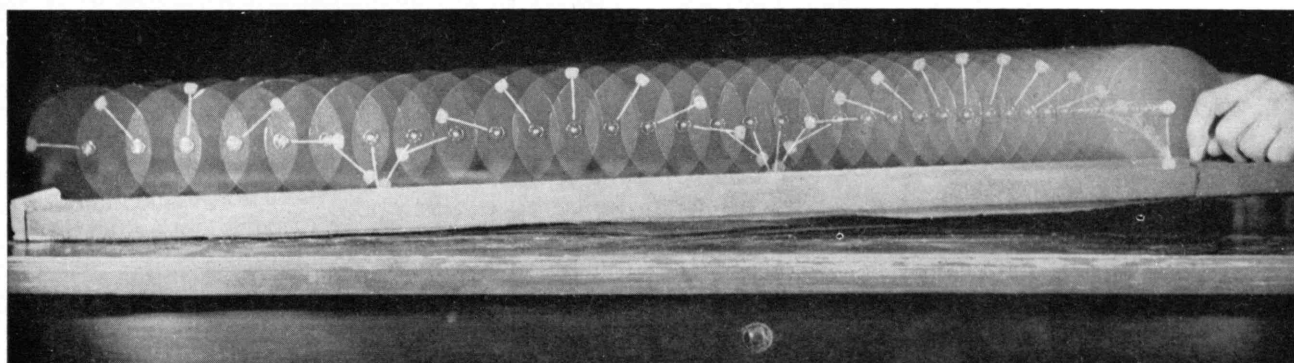
The book, too, recalls the nostalgic past. The biggest fire disasters since 1900 remain the *General Slocum* and the Iroquois Theatre fires; while in more recent days — those of the last decade — there were about forty \$1,000-000 fires, which include those of the Chicago stockyards, Coney Island, the *Morro Castle*, and the *Hindenburg*.

Serious "sparks" can find much information on apparatus, hose and couplings, and all mechanical contrivances, including foam systems, sprinklers, carbon dioxide systems, steam-smothering systems, signaling systems — in short, in 1,308 pages everything about fires except the checker rules which prevail in the firehouses.

IF, however, a layman wishes to do serious reading which he can understand and perhaps use in the field of fire, he may best turn to a third volume. *Fire Defense*,† just published, is a clearly written and profusely illustrated book reporting what has happened to Europe under the rain of incendiary bombs and giving instructions on what can be done to minimize difficulties which might arise here, including those of arson by the saboteur. This is a book to be taken seriously, for, as we have been reminded by Attorney General G. D. Conant, chairman of the Ontario Civilian Defense Committee, "Attack, either from within or without, is a risk which cannot be ignored in view of events in other countries."

So, with obeisance to science and compliments to fire-protection engineering, The Review ventures for the moment to lay the wreath on the book devoted to defeating the satanic aspirations of man.

† Boston: National Fire Protection Association, 1941. x and 221 pages. \$1.50.





## Wrap It Up

**F**EW chestnuts are more hollow chested with age than the one about the shopper who agreed to buy the yard of milk provided it was wrapped up. Packaging of milk has been in recent years a focus of attention more prolific in argument and counterclaims than in anecdotes of even this quality. Milk in waxed paperboard, milk in molded wood pulp, milk possibly in tin — these have been among the projects to replace the glass bottle. The versatile plastics, in the judgment of some designers, may provide the next addition to the debate. Milk bottles modeled out of plastic material have already been shown by industrial designer Clarence P. Hornung. Constructed so as to be closed by means of metal caps put in place by existing capping machinery, the Hornung bottles are designed with pouring spouts. Pleating of the sides and polygonal treatment of surfaces are more practicable with plastics than with glass.

Another Hornung project recently in the news is a "quadri-can" — a tin can divided by diametrical partitions into four inner compartments, each of which may be opened by a key device. Heating the whole can in a single pan of water, the housewife then would open it and serve the four different foods occupying the compartments. Simplification of housekeeping and stimulation of sales of related products in a manufacturer's list are cited as advantages of the scheme.

The synthetic sheeting materials which have already become familiar in their work as raincoats, shower curtains, and so on, are looking to the packaging field as

*Gasoline tanks at Fisherman's Wharf in San Francisco set the mood for this display of cylindrical forms in varied industries.*

*Raymond B. Colle-d '20*



not a future possibility but an immediate venture. Resistance to outside exposure, such as sunlight, oxygen, and temperature changes, is stressed by one manufacturer as a virtue of his product. Re-usability of the packages is emphasized by another. Waterproof qualities and the advantage of visibility of contents are likewise cited. Wrapping of citrus fruit in a skin of transparent synthetic is advocated as a means of preventing spoilage and of preserving appearance and flavor.

Packagers have, more than most people, to reckon with the average consumer's whims and prejudices, such as, for instance, a belief recently uncovered in surveys preliminary to the acceptance of designs of a new line of bottles for pharmacists to use when filling prescriptions for doctors. This idea, which came as a surprise to the bottle manufacturer, is that a short, squat bottle holds more than a tall, slim one. Prescription bottles of amber glass were accordingly designed with this belief in mind and, as a consequence, will fit more readily on shelves of the family medicine cabinet or in pocket or purse. Use of amber glass in prescription bottles is held desirable as insurance against depreciation of contents by radiation admissible through ordinary flint glass.

## Mine and Countermine

**W**ITHIN its limitations the mine affords an absorbing study, undoubtedly one of the most thrilling games the amateur tactician can play and a fascinating field for the professional soldier looking for honors or his fate. In what is perhaps the first book to be devoted to mine warfare,\* Archibald M. Low, a British writer, not only traces the history of mines from the fire ships Appian described but also, as far as censorship restrictions permit, brings us up to date on this form of the military art.

Real knowledge of mines dates only from the 1860's and that great proving ground, the Civil War. Early efforts were concentrated on the idea of moving a load of explosives into contact with the underwater portion of a naval hull. Not until Whitehead's automobile torpedo had solved that problem was the mine developed primarily as a stationary defense mechanism.

When the confusion of its purpose was cleared away, the mine rapidly built up a record of destruction which far surpassed that of the torpedo. During the Russo-Japanese War many ships were sunk by mines, but not one fell victim to a torpedo. At Jutland 926 torpedo tubes were ready for business, yet of a hundred large ships exposed to their menace only three were seriously damaged, while at Gallipoli alone several Allied ships were mined. It remained for German ideas of war making, through attacks on merchant shipping, to achieve the destruction expected by advocates of the torpedo. Since that policy was instrumental in securing the armed intervention of the United States, however, it worked heavily against its originators. Now, once more, the torpedo leads in hits in the box score of war and again operates to draw powerful allies to the enemy's side. Meanwhile, the evolution of mine warfare has been

\* *Mine and Countermine* (New York: Sheridan House, 1940). xi and 224 pages. \$2.75.



*Cushing-Gellatly*  
A gas company's holder station at Monrovia, Calif.

exceedingly rapid, especially from the time when an adequate supply of modern mines became available to the British in 1917. Whereas the defense of Mobile Bay in 1864, one of the most ambitious undertakings of the Civil War, was done with eighty mines, the North Sea barrage, laid in 1918 with Britons and Americans co-operating in the work, comprised 172,000 mines.

Although many special types of mines have been developed, the moored contact mine is standard today. Enlarged in size and improved in reliability since World War days, it is an efficient piece of machinery. But its role is passive; it will hardly win a war. Its strategic function is to restrict the mobility of enemy vessels; it cannot destroy them if they do not move into the wrong places, and even if they do, the use of paravanes greatly reduces the risk. Some authorities speak of "offensive" mining, but it is almost self-evident that an unprotected mine field is a waste of time and money, for a mine field can be swept more cheaply than it can be laid. Thus, in the end, the success of mine warfare depends on the naval and air strength that supports it.

The early discovery of the magnetic mine, the dissection of that first awful specimen, and the prompt development of a cheap and adequate retort, the degaussing girdle, seem to Professor Low to be partly fortunate, partly routine incidents of the present war. From this and many other stirring accounts he goes on to explore the possibilities of land and aerial mines.

Although the land mine is more ancient than gunpowder, it has found a new vogue in the need for a defense against the tank. As is true of mines in naval warfare, the land mine has, in the barbarous fashion of

ruthlessness, often been perverted into use as a mantrap equally dangerous to friend or foe, military or civil, thus verging on the infernal machine of the assassin. But if a land-mine sweeper has not yet appeared, neither has the land mine itself succeeded in halting for long a resolute advancing force. With any such device, the psychology of novelty and surprise may yield valuable temporary results; thus, in the battle of Jutland, the fear of underwater attack weighed on the British, affected the day, and may have served to prolong the war, but it did not reverse the balance of power at sea.

The barrage balloon and its mooring cable form a kind of aerial mine. Explosives are unnecessary because of the relatively delicate construction of aircraft. A space, rather than an area, must be mined, but the dimensional effect of the cable is in a line rather than a point, so that the geometry is somewhat similar to marine mining. Notwithstanding its homely appearance, the barrage balloon has been effective in forcing the attack to a higher altitude and preventing a straight run over a target area, especially at night.

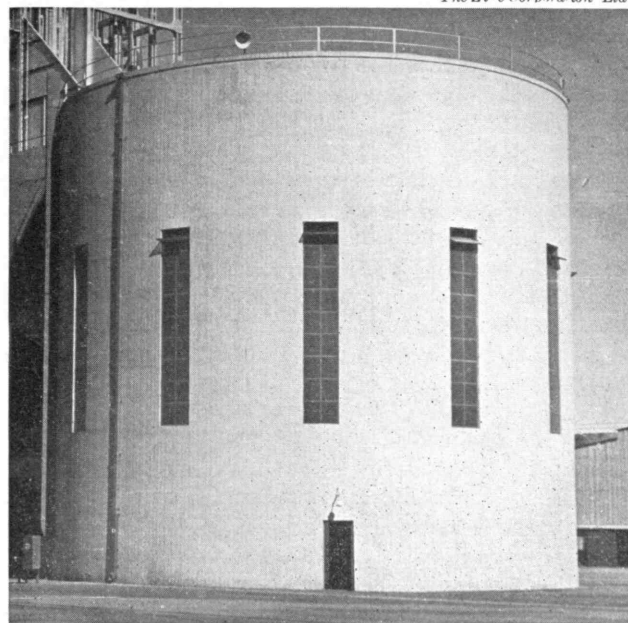
A long cable is difficult to support, for mild steel wires in still air are stressed to the working limit by their own weight at a height of about 25,000 feet. The suggestion of parachute-supported wires or cords shot up to high altitudes has already been advanced. An adequate defense against indiscriminate night bombing remains to be found, and the logical reply of destroying the enemy air bases seems to be the most promising line of endeavor, with the issue hanging on air power.

### *Argosies Tabulated*

AS an element in the export trade of the United States, books do not bulk very large in terms of dollars (total exports of bound educational books, other bound books, and unbound books in sheets were valued at

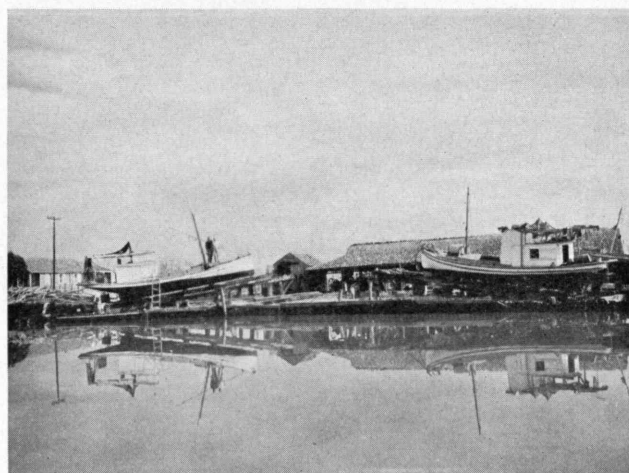
*Circular breaker station at Broken Hill, New South Wales, Australia. The Broken Hill ore body is, for its size, the richest individual producer of silver, lead, and zinc yet discovered.*

*The Zinc Corporation Ltd.*





**S**HRIMP are the reason for the industry pictured here by C. E. Patch, '02, in photographs showing, in the usual order, two shrimp boats hauled out in the repair yard at Cut Off, La.; a shrimp boat at Biloxi, Miss., rigged for oystering, when she will carry a deck load inside the bulkhead aft; and the Colter Lagoon at Palacios, Texas, with craft readying for work. In the bays along the Gulf Coast, two men to a boat shrimp for three months, using an otter trawl, then dredge for oysters for an equal time. Deep-sea workers, like those who operate out of such ports as Morgan City, La., and Galveston, Texas, work practically the year round, three to a boat. Of the \$10,000,000 product, about half is canned, the rest being sold fresh or frozen. Half the take from a trip goes to the crew, who find themselves and buy their own ice for keeping the catch, and half goes to the owner, who keeps up the boat and buys gasoline.



\$4,505,950 in 1940), yet statistics concerning them are important. Books going to foreign lands may well be regarded as argosies outward bound with cargoes of characteristic ideas; the consignees who authorize such lading are seeking more than paper, ink, glue, thread, cloth, and binder's board. Hence there is special interest in the fact that Argentina stepped into fourth place among importers of books from the United States in 1940, spending \$295,142 for textbooks alone. Brazil, Colombia, Venezuela, and Mexico also bought many books from the United States in that year. Almost one-half of the entire export book trade of the United States went to Canada, with a total valuation of \$2,242,116, of which \$1,564,320 went for other than educational books. Book exports from this country have declined steadily during the past three years, the drop from 1938 to 1940 being over a million dollars.

Preliminary figures released by the Bureau of the Census for United States production of books in 1939 show a decline of 9 per cent from 1937, the figures being 180,142,492 volumes for 1939 as opposed to 197,359,076 for 1937. Bibles and Testaments still head the lists of volumes published on a single subject in this country, the total for 1939 being 7,947,848 as compared with 5,579,317 for 1937. Titles in science and technology continued the climb which they began in 1935 after a depression slump in 1933. In 1939, the total in this category was 3,432,642, an increase of well over a million copies above the figure for 1937. The Review noted in December, 1939, that versification had not yet struck bottom in the decline in number of volumes of poetry and drama published. Seemingly, the end is not yet, for titles in this field in 1939 amounted to 1,499,477, a loss of almost 300,000 from the total for 1937. The 1939 total for fiction, 13,511,181, shows a remarkable drop from the 25,454,135 volumes in this class published in 1937, and titles in medicine dropped more than a million from the 1937 figure of 3,923,532.

### Defeated

**R**EPULSE of a sinister invader in South America is reported from the New York headquarters of an army of science, over two thousand strong, which in the past three years has been waging unsung war on insects. The invader in question was the dreaded malaria-

carrying mosquito, *Anopheles gambiae*, native of Africa. Apparently taking advantage of man's means of transportation, it had sneaked a ride across the Atlantic in an airplane or on one of the fast French destroyers which, about eleven years ago, were serving the French air line between Dakar in West Africa and Natal in Brazil. The mosquito was discovered in Natal in 1930 by a member of the staff of the Rockefeller Foundation.

In collaboration with the Brazilian Government, the foundation in 1938 began organization of a systematic campaign to halt the alarming spread of the insect, which produced an especially virulent form of malaria. How necessary the campaign was, is indicated by the sweep of the disease as the mosquito worked up the coast, following the prevailing winds. More than ninety out of every one hundred persons in the Jaguaribe Valley in the state of Ceará were affected by the disease during 1938. In some regions mortality was as high as 10 per cent, and the epidemic so disabled the population that no crops were planted.

Studying the mosquito and its habits, taking advantage of climatic changes, establishing fumigation and quarantine stations, and marshaling a trained field army of doctors, technicians, scouts, inspectors, guards, and laborers, the Rockefeller Foundation and the Brazilian Government by 1939 had pushed the *gambiae* back to its central strongholds in the main river valleys and on the narrow coastal shelf of northeastern Brazil. The great threat of the mosquito's breaking through to the well-watered Parnahiba and São Francisco valleys, whence it might have spread to a large part of South, Central, and even North America, appeared to have been stopped. The *gambiae* had covered half the 500 miles separating the Parnahiba Valley from Natal when its course was checked.

The frontiers of the infested region were marked by fumigation posts on every outgoing road, at which all departing vehicles were stopped, inspected, and fumigated. Beyond the farthest limit of the *gambiae*'s advance, a ten-mile zone was kept noninfectible. All breeding places within this area were eliminated or were treated with Paris green or other larvicide. Since the *gambiae* breeds mainly in shallow pools open to the sun and without vegetation, every little depression in the ground, such as a hoofprint or a wheel track, which could afford a water surface for eight or nine days had



to be reckoned with. The carelessness or the unwillingness of mankind likewise was a source of possible trouble; once, an old automobile, using a jungle cart track and avoiding the fumigation post on the main road, carried the mosquito many miles into previously uninfested territory.

Intensive campaigning during 1940 resulted dramatically. By the start of the dry season the mosquito had been virtually confined to the lower Jaguaribe Valley, where a large number of workers were brought together for a final attack beginning in July. During the last forty-seven days of 1940, no evidence of *gambiae* was found in Brazil. Summing up in his review of the foundation's activities for 1940, Raymond B. Fosdick, President, thus concludes the section dealing with this work, which has been headed by Dr. Fred L. Soper: "Those directing the campaign no longer consider it rash to speak of the eradication of the *gambiae* from Brazil, although it must be remembered that the struggle will not be won until the last fertilized female *gambiae* on this side of the Atlantic is destroyed. In any case, no matter how many isolated foci may yet be uncovered, the critical phase of this immediate campaign seems to be over. . . ."

The second great scourge of mankind which mosquitoes transmit — yellow fever — has likewise received a setback at the hands of Rockefeller Foundation investigators during the year past. The virus of this disease, it had been thought, was carried by the *Aedes aegypti* mosquito and kept in circulation by a mosquito-man-mosquito cycle. Discovery, a few years ago, of the existence of the disease in parts of the South American jungle where were located no *Aedes aegypti*, presented a mystery which foundation workers undertook to unravel. Two other species of mosquitoes were found to carry the virus, but no virus could be demonstrated in any form of insect life other than mosquitoes. Several broad groups of animals, ranging from men and monkeys to opossums, to anteaters, sloths, armadillos, and to various rodents were shown by tests to be susceptible to the disease.

From these and other lines of investigation, tentative generalizations have been drawn by the Rockefeller scientists. Yellow fever they deem to be primarily a disease of jungle animals; so the mosquito-man-mosquito cycle formerly regarded as of primary importance is



looked upon as more of a secondary cycle depending in large measure on concentration of population and on conditions of mosquito breeding created by man himself. Jungle yellow fever, they find, appears to be transmitted from animal to animal by jungle mosquitoes, but there is no animal reservoir of virus in the usual sense. In the blood of an infected animal, virus circulates for three or four days but does not re-appear. After infection, however, mosquitoes harbor the virus for the rest of their lives, a period which may be for several months. Vaccination of people near infected forest areas appears to be the most important procedure for control of the disease. Studies among wild animals in a region may be used to determine risk to humans in entering the region.

### Gallimaufry

**W**EEKLY laundry requirements of about 1,500 soldiers will be taken care of by a portable laundry unit which the Quartermaster Corps of the Army is at present developing. Mounted on a four-wheel semi-trailer, the unit will contain machinery and equipment necessary to do field laundering, including a washing machine, an extractor to remove surplus water from the materials laundered, and two steam-heated tumblers for drying. Thus are the appearance and well-being of the military man being provided for. Another machine-design project now engaging army officials is the development of a new sewing machine for use on celluloid, imitation leather, and canvas. The sewing-machine industry has co-operated in the devising of the new stitcher, to be employed on tarpaulins and curtains for motor vehicles. ¶ About a quarter century is the present life expectancy of the industry of dredging coal from the Susquehanna River in Pennsylvania, according to a writer in *Compressed Air Magazine*. In 1889, dredging operations began to recover coal swept into the river from mine breakers and culm or silt banks, and from waste piled up at collieries. Some 13,000,000 tons of "river coal" have been dredged up since that time, most of it being used for raising steam. About 20,000 tons a year, however, are utilized for recarburizing steel in the open-hearth process. (River coal, for some undetermined reason, is found to give better results than does ordinary anthracite.) In 1937, thirty-three dredges were in



operation on the Susquehanna and other eastern Pennsylvanian rivers, recovering 760,474 tons of coal valued at \$842,052, average price received for a ton being \$1.11. Sources that feed the streams are gradually diminishing as large breakers of new types are erected, as fine sizes are more generally utilized, and as silt is more securely stored. Something more than 500,000 tons of coal is estimated to be on the bottom of the Susquehanna at a time. ¶ A new opportunity for devotees of the bow and arrow is in use of the archer's equipment for paint-branding of deer in national forests. Paint brands are used to mark the animals in order to facilitate study of the extent of their traveling from one feeding area to another. Arrows tipped with sponge rubber dipped in varicolored paints are employed and do not injure the deer. The herds are so tame that a marksman can brand several animals from one shooting stance before the herd scatters. ¶ For one of the 2.5-ton trucks being built for the Army, more than 11,000 pounds of carbon steel, alloy steel, gray iron, and malleable iron are required. Shipping weight of the vehicle, however, is but 9,500 pounds, a fact indicating the large allowance for scrap that must be made in the manufacture of such a unit. More than thirty pounds of zinc, seventy of copper, twenty of aluminum, fifty-five of manganese, and eight of nickel are also used, plus 450 pounds of natural rubber, half a pound of synthetic rubber, and thirty-two pounds of lead. Eighty-six pounds of paints provide weather protection and reduce conspicuousness. ¶ Fly screens of vinylidene chloride, now under test in various parts of the country, are recommended as much less conspicuous than the standard black wire screen. The plastic screens are durable and resistant to corrosion. Strong, flexible strands which may be woven into attractive and long-wearing covering material are secured by the stretching of extruded vinylidene chloride. In some new air liners, bulkhead panels of this material are employed. The woven sheet has also been used as a seat covering in New York subway cars. ¶ Sixty-seven and four-tenths cents of the amusement dollar in 1939 were spent in motion-picture theaters, according to the Bureau of the Census. Billiards, pool, and bowling constituted the next largest group of amusements in terms of receipts; they collected 8.8 per cent of the total amusement expenditure of \$1,850,355,000 in 1939. Horse and dog tracks took in 4.4 per cent, and the legitimate theater trailed individual categories with but 3.3 per cent. The remaining 16.1 per cent went to other amusement industries, including riding academies, amusement parks, and private swimming pools. ¶ Photography with soft x-rays, first used industrially in the textile trades some seven years ago, is at present being recommended as of possible value to advertising. Using rays of wavelengths longer than those of standard x-rays, such photography reveals details of texture and structure even to depths of half an inch within some materials, yet retains other details. Useful in testing textiles and chemicals for defects in workmanship, soft x-ray photographs may be employed to show the buyer what are the interior conditions of the goods which he considers purchasing. ¶ Followers of quiz programs, in an effort to stump the experts, have not yet made use of the beedie, despite the

oddity of the name. Beedies are handmade cigarettes produced mainly by small establishments throughout India. Smaller and thinner than the standard cigarettes, beedies taper at one end, contain less than half the amount of tobacco used in a standard fag. A thousand can be rolled from about a pound of tobacco and will sell in Calcutta for about seventy cents for the best grade. Filler treated with various kinds of perfume is employed in some kinds. Low-grade domestic granulated tobacco is used in beedies, being rolled in a section of the leaf of a species of Indian ebony. ¶ The processing of cottonseed to obtain oil and protein feedstuff has as a by-product the hulls of the seeds themselves; a method for the utilization of these hulls may lead to increase in the cash value of the cotton crop. University of Tennessee researchers have been studying means of using the cottonseed hulls as a filler for phenolic molding compounds — an idea suggested before but not adopted on a commercial scale. Strength characteristics of phenolic cottonseed-hull molding compounds, it has been found, can compare favorably with those of commercial phenolic compounds if size of particles and content of fiber are properly controlled. Specific particle sizes and fiber contents provide maximum strength. Pilot-plant production of small batches of the compound has been carried on with the co-operation of custom molders, one of whom has submitted bids on national defense orders based on a use of the new material. The compound is also being used in molded sheaves for looms, which have in the past been made from wood and have had to be replaced frequently because of mechanical wear.

### "No Such Number"

SPINNING the dial of his telephone with haste or inattention, the subscriber may rather often set up a combination of numbers not yet assigned for service and thus may occasion delay to himself, delay to other telephone users, and expense to the telephone company. He may in addition, of course, make it easier for himself to commit the same mistake again, simply by the fact that he has set up an erroneous pattern of numbers in his own mind.

Development of a "no-such-number" tone which will sound through his receiver and inform him of his error, as the "busy" signal already operates, is hence of interest. For such work, the tone should be distinctive, and easily remembered and associated with the idea of disconnecting and dialing the number again. Bell System engineers have been working on the development of a circuit to supply a tone meeting these requirements and have devised one which supplies a note varying continuously in frequency, much as the note of a siren varies, alternately rising and falling at intervals of a half second. It is a train of oscillations whose fundamental frequency varies between 200 and 400 vibrations a second, each oscillation consisting of a fundamental and many harmonics. In field trials, the new system is reported to have proved distinctive and arresting enough to get immediate attention from the subscriber, and to have resulted in a higher percentage of correct numbers at the second dialing.

# The Genie in the Ampoule

## *How the Discipline of Science Has Translated a Jungle Poison into a Useful Drug; Curare, Now Made Predictable, Becomes Another Servant of Medicine*

BY RICHARD C. GILL

THE genii of Arabian legend, no matter in what kind of bottle they were imprisoned, were rarely predictable when they were released. And certainly the genii in the foul-vapored, seething caldron of an upper Amazon witch doctor could hardly be termed predictable, especially (from the point of view of medical science) when the caldron contained curare, the erstwhile mysterious arrow poison of the South American jungles.

Through the discipline of modern science, however, the genie in a sterile ampoule of biologically assayed and standardized curare *is* predictable and *does* function to perform miracles. Administration of the drug results in relaxation of the striated, or voluntary, muscles, as, for example, in various states of so-called spastic paralysis. The achievement of a state of predictability is the essence of functional research, for predictability is the greatest and most important single characteristic of any medically usable substance, at least as regards the clinician, whose administration of a drug is that drug's ultimate destiny. Even the terminal result of the administration of any drug, no matter how valuable in an individual case, is quite worthless unless the result also can be predicted for general use.

Predictability is essential in the whole cycle of any drug: in reliable sources, in reliable materials at those sources, in reliable production of a substance which must be unvarying in its physiological reactions, in the technique of assaying and standardizing the product and of preparing it for its final human or even animal administration. The discovering botanist, who is frequently an ethnobotanist; the pharmacognocist, who might be called the liaison officer in the world of drugs; the pharmacologist and the pharmaceutical manufacturer; and, finally, the administering physician — each one bases his work on predictability.

Thus to make a drug predictable is, axiomatically, to make it functional. If curare could be made predictable in the field of medicine, a group of investigators decided some years ago, it would offer human values more than offsetting the labor involved in bridging the long and cloudy gap

from the primitive jungle to the predictable ampoule. That gap, as those of us participating in the investigation now realize, was almost inconceivably long, and involved one of the most intricate pieces of expeditionary strategy which had ever come to our attention. The research was complicated not only by all the problems that one might expect to encounter in translating a lethal jungle poison into a functional hospital drug but also by the curious and constantly baffling fact that most of the earlier knowledge of curare was quite erroneous. This aspect of our problem — the most onerous aspect — was caused not so much by prevailing errors regarding the clinical usage of the drug, whose physiological actions have long been known, but by numerous misconceptions and *idées fixes* regarding both the origin and the intrinsic nature of the substance. Apart from published clinical observations, there was extant hardly one single item of information which was trustworthy in its *entirety* as a basis for tactical procedure either in the field or in the laboratory. A brief résumé of the situation regarding curare will best explain why we were forced to undertake this particular research on what was really a purely empirical basis.

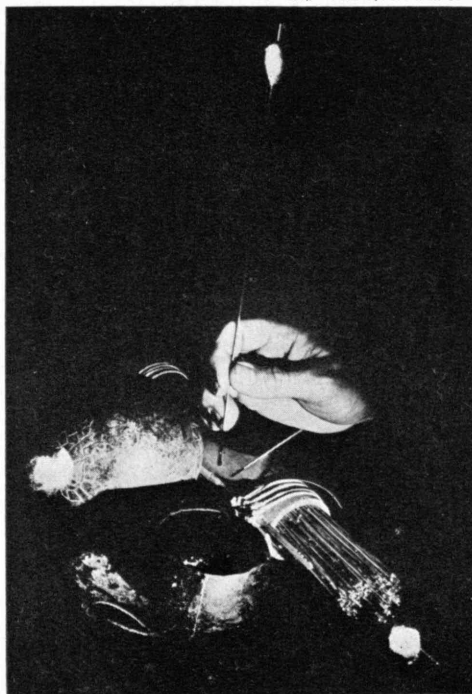
From time immemorial, curare has been made chiefly by witch doctors, or medicine men, of certain tribal groups living mainly in the northern and northwestern sections of the Amazon basin and in the upper Orinoco. Crude curare is a dark brown to black

gummy substance. In those regions in which we are interested, it is made by brewing, in water, combinations of the stems, bark, roots, and leaves of certain plants of the Menispermaceae, Loganiaceae, and other families. The resulting infusion is strained and then by being boiled is concentrated to a partially desiccated state for storage until it is used for poisoning the tips of blowgun arrows. In the Amazon, the primitive function of curare is confined almost entirely to the killing of game in hunting; the meat thus killed is quite edible. Use of curare in warfare is, contrary to some reports, almost unknown.

The early Spaniards had long endeavored to ferret out the jungle mysteries surrounding the

*Used almost exclusively for hunting, the jungle poison, curare, is applied to the tips of blowgun darts.*

*Courtesy R. R. Squibb and Sons*





making of this deadly primitive poison, but the first such records in English literature are not found until Hakluyt's description of Sir Walter Raleigh's voyage to the Orinoco Valley in 1595, where he says:

"... [the Indians] have the most strong poyson on their arrowes, and most dangerous of all nations, of which poyson I will speake somewhat being a digression not unnecessary.

"There was nothing whereof I was more curious, then to finde out the true remedies of these poysoned arrowes: for besides the mortalitie of the wound they make, the partie shotte indureth the most insufferable torment in the world, and abideth a most ugly and lamentable death, sometimes dying starke mad, sometimes their bowels breaking out of their bellies: which are presently discoloured as blacke as pitch, and so unsavoury, as no man can endure to cure, or to attend them. And it is more strange to know, that in all this time there was never Spaniard either by gift or torment that could attaine to the true knowledge of the cure, although they have martyred and put to invented torture I know not how many of them. But every one of these Indians know it not, so not one among thousands, but their soothsayers and priestes, who doe conceale it, and onely teach it but from the father to the sonne. . . ."

Unfortunately this graphically macabre piece of reporting has no more bearing on the true picture of curare and its action upon its victims than has much of later literature. In fact, Hakluyt's report seems to foreshadow many of the more dubious descriptions of curare which were written during the centuries that followed. Despite the grimness of the "field research methods" imputed to the Spaniards by Sir Walter Raleigh, that doughty gentleman's own description of death by curare is the antithesis of the near flaccidity by means of which the drug actually ends life.

This particular misconception holds in practically all the popular literature and, regrettably enough, in much of the scientific also. Many other erroneous ideas

regarding the nature and primitive origins of the drug occur in pseudotechnical literature, in travel stories, and elsewhere. Most accounts, therefore, are hardly helpful when evidence is being prepared and correlated for research in the drug. Likewise much of the excellent work in the chemistry of curare

\* Richard Hakluyt, *The Principal Navigations, Voyages, Traffiques, and Discoveries of the English Nation* (New York: Dutton, Everyman's Library), VII, 321.

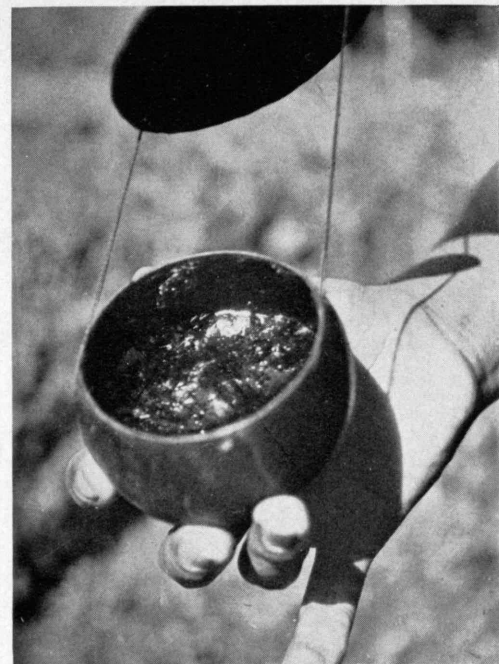
is to a certain degree premised on misconceptions — or possibly on a certain lack of knowledge — regarding the sources and origins of the drug. The active principles of curare consist in the main of grouped alkaloids, highly complex in their chemical nature and interrelationships. Considerable work in the fractional chemistry of these groups has been done, particu-

larly in England and Germany. Much of the value of this study has been lost, however, because the work was apparently done on small amounts of heterogeneous mixtures brought into civilization by wanderers in the South American wilderness who obtained the gourds (sometimes bamboo tubes or small clay jars) of the material without in the least knowing either qualitatively or quantitatively what had entered into the mass. No field authentication was made of the exact botanical ingredients or of the proportions used in these batches of curare, and therefore no predictable duplication could be made of the batches on which such detailed and exhaustive fractional analyses had been based. As a consequence, and until very recently, curare was "scientifically classified" by the *type of container* in which it made its first appearance in civilization. Thus we had pot curare or gourd curare or tube curare — as futile a system, scientifically, as endeavoring, for example, to classify quinine salts by variously calling them pasteboard-box quinine or glass-vial quinine!

The chemical knowledge of curare was further complicated by the fact that, clinically speaking, no chemical fraction of the drug was so good in its physiological effects as were those infrequent batches of "entire" drug which were occasionally used medically. Synthesis of a clinically adequate equivalent of natural curare has so far been impossible.

Even botanical taxonomy is (or at least was) confusing to a certain degree because one of the main groups of curare plants was classified in the *Strychnos* genus. This forgivable, if baffling, error of observation was made by the famed explorer Robert Schomburgk, who was one of the first to correlate an actual plant with an actual batch of curare. Since the action of curare is directly opposite to that of the strychnine group (their respective chemical structures also differ radically), the mistaken nomenclature has given rise to some further fantastic misconceptions.

And certainly from a civilized point of view the work of the witch doctors, the original manufacturers, could hardly be considered a means of predictable production, even though our own production technique was of course finally evolved out of the (*Continued on page 316*)



Courtesy Henry Holt and Company

Primitive curare is a dark brown to black gummy substance.

The blowgun, as we recognize the philosophy of weapons, is remarkably efficient in that it projects sure death, silently and accurately, to an optimum range.

Courtesy Henry Holt and Company



# Destroyers

## *The Mercuries of the Fleet Are Fierce Fighters as Well When Need Arises*

BY RICHARD HALLET

NO ships of the Navy have more dash than do the destroyers. I have known some intimately and had a speaking acquaintance with others. They are temperamental ships, having the defects of their qualities. In a hot action they are usually good for only three or four minutes of actual fighting. They must win or lose quickly. Most naval officers, however, think themselves lucky to be assigned to the command of destroyers.

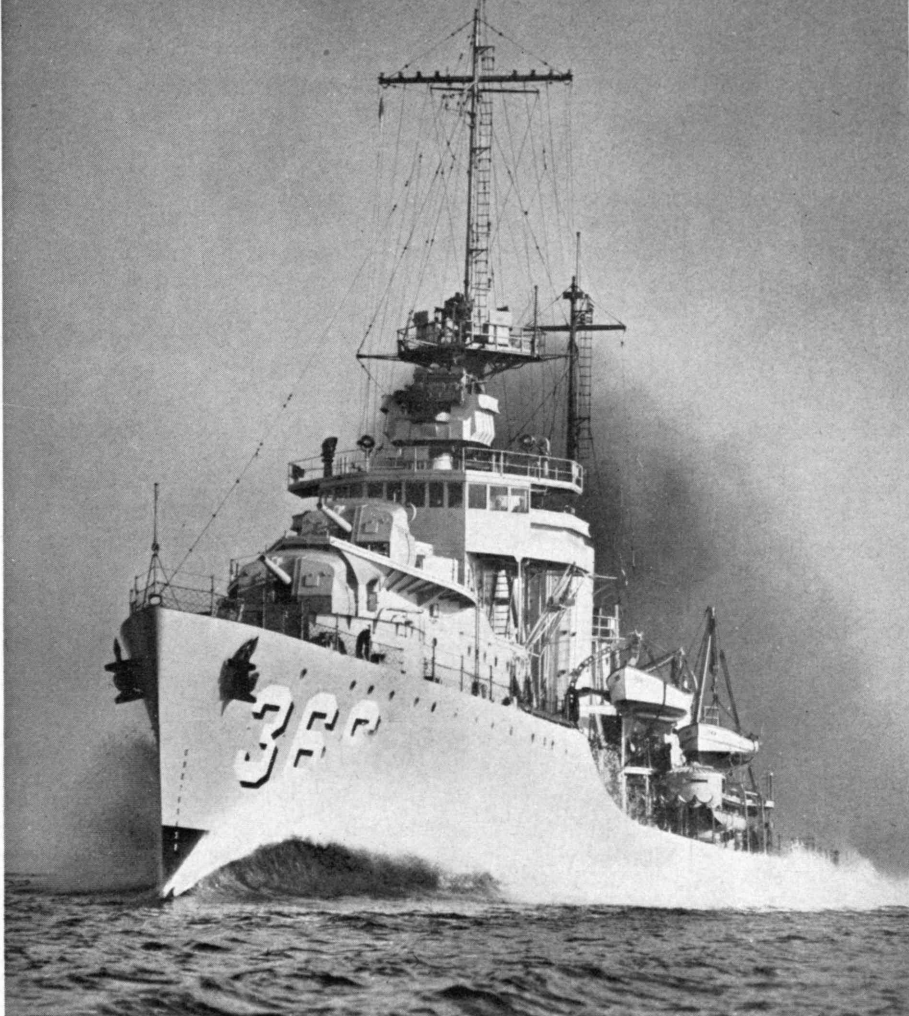
For one thing, their speed is thrilling. As they are often secret-bearing ships, they must have speed. Lord Bacon said: "... There is no Secrecy comparable to Celerity; Like the Motion of a Bullet in the Ayre, which flyeth so swift, as it out-runs the Eye." Because of their speed, destroyers are sometimes dispatch boats. In 1928, when I was with the western battle fleet, one of our planes, after being catapulted, fell out of the skies and sank like a plummet beside the battleship *West Virginia*. An hour later the black shape of a destroyer knifed fast across the face of the sun, whose lower limb had already dipped beneath the horizon.

"Going to tell the wives in Honolulu that their men are a thousand fathoms deep," our flight lieutenant said gloomily.

Destroyers, the mercuries of the fleet, can also fight fiercely, as the battle at Narvik showed. Nevertheless, their pecan-shell hulls are not made for resisting cannon fire. It is sometimes said jokingly that boys with air rifles should not be allowed in a yard where destroyers are building. Defensively destroyers are weaklings. Their job is to shadowbox, to provide a screen ahead of the bulldog line of battleships, to nose out submarines and sink them with depth charges.

In the last war, as in this, they convoyed troopships. Some of the destroyers had terrific adventures. Rear Admiral William A. Glassford, now in charge of the Yangtze patrol, once told me of his experience with the destroyer *Shaw* while she was convoying the troopship *Aquitania*. Near the coast of France the *Shaw's* helm jammed. By then, her course could not be changed. The two ships were rapidly converging and must meet. Glassford, then a commander, had two choices: Either he could increase his speed and be rammed himself, or he could slow down, in which case he would ram the great transport amidships.

He chose to increase his speed and be rammed. And he was rammed. As a matter of fact, the *Shaw* was cut in two, just forward of her bridge. The *Aquitania's* colossal beak pushed right through everything and out on the



© Douglas

*Balance, precision, speed . . . a destroyer knives through the sea on a trial.*

other side. The grind of metals threw out sparks that lighted the oil from ruptured tanks. There was a gush of fire round the *Shaw's* lower bridge, and Glassford's first job was to unstrap and throw into the sea a lot of five-inch shells. In the engine room the engineers were desperately shoring up bulkheads; presently Glassford was able to go astern gingerly with his two-thirds of a ship. The *Shaw* had been cut in two so cleanly that the forward third of her actually lived for half an hour. As for the remaining two-thirds, Glassford succeeded in maneuvering it back to the base at Queenstown, a distance of sixty miles, and all the while in the go-astern motion.

He had had plenty of experience with destroyers and knew what tricks can be played with them. Once, on the Eastern station, he had come upon another destroyer stranded on a sand bar in the Yellow Sea. Her commander had lightened her every way he could, but still the full force of her backing turbines was not enough to snatch her off.

A grizzled warrant officer muttered in Glassford's hearing, "A northeast wind would help."

"How would that help?" Glassford questioned.

"Kick up a sea, sir, and she could pull herself off on a wave."

The sea was like a mirror, but Glassford saw how he could manufacture a wave. He swung away through a five-mile circle and then came back at full speed close against the stern of the stranded ship, whose engines, by pre-arrangement, were going full speed astern. Glassford's bow wave ran under her and lifted her, and in those seconds her engines pulled her off into deep water.



I remember in my own experience an occasion when a destroyer took the shape of an angel of mercy. That was in the last war. I was third mate of an army cargo transport, and we were not playing in luck. We were in the war zone, close against the coast of France, when a faulty grease cup stopped our engine for five minutes. We were losing the convoy fast, but the cruiser escort talked to us like a hen clucking to her chick, and we came on again. The going was rough in the Bay of Biscay, and we tossed round like a forty-shilling iron pot. The mate spent his time off watch heaving at the lashings of the airship crates forward, which were slipping loose. The lifeboats, swung out over the water, were also getting knocked loose by the seas. Our compass was out of whack because the Old Man had tried monkeying with the quadrantals while at sea. We didn't rightly know where we were and it was getting dark, with France, a solid and not a liquid fact, just ahead somewhere.

In this plight we fell in with a French destroyer, right against the land. Lean and low, she came oozing up out of a trough with a cocky rake to her twin stacks. From hooks under her pilothouse swayed three or four beeves, glittering with brine crystals. She looked habituated to her job — as if she knew her way around. And she had the insouciant stamp of the free French of those regretted days. She signaled our ship to tail in astern of her and hung out an amber sternlight to help us do so.

That spark was the only light on the French Coast, it seemed to us. The lighthouses had doused their lights because submarines found them useful. With just this faint gleam for a guide, we followed on. The sea was black and smooth this close in. It was my watch, and I kept the ship's prow on that amber light. Suddenly, close aboard on my starboard hand, and standing right up out of the water, appeared a jagged collection of rocks as big as cathedrals. We were at the entrance of Quiberon Bay, which has been the scene of more wrecks and battles than any other bay in the world, but the French destroyer knew her way in, and we crept after her, quaking. I don't know what we should have done if that faint amber gleam had winked out. But it held steady. My friendship for destroyers dates from that entrance into Quiberon.

Some destroyers in their old age have sought service in the Coast Guard. I was on a cruise a few years ago in one of these. The January seas ran high. Besides her straight pitching and tossing, the destroyer had a spiraling corkscrew motion and a rippling caterpillar motion, and then a motion that blended the worst qualities of each. All over the ship were pantings, creakings, slobberings, gurglings, and sounds of like evil omen. Room curtains hung straight out in the alleys, and now and again would come the crash of loose furniture falling down, the ring of dishes and glasses, and other less identifiable sounds telegraphed from distant portions of her struggling and laboring hull. She seemed at times to be flying all to pieces.

One noon, off Block Island, our wardroom lunch was topped off with a savory pineapple whip. Later, with my friend the executive officer, I went up into the wheelhouse. The place was full of a bad smell of burning salt, from spray which had come through loose windows and fallen down on hot steam pipes.

The executive officer said to me darkly: "I am not satisfied with the food on this ship. I think that pineapple whip we had for lunch was made with sour cream."

The cream was actually the very best. The fact is, the executive officer was a seasick man and plunged for the rail, where I joined him. Even the cook in the galley was seasick from the smell of his own food. Destroyers are by nature seasick ships, and even the new ones are no exception to this rule.

A new destroyer is a thing of beauty, even though she may not be a joy forever. When the iron plate that holds her to the land is torched away, six million dollars hang in the balance. The builder is aware of this fact. His hand at her prow, he seems to breathe a prayer and push her back into the tide. The pretty girl with an armful of roses christens her with a bottle of champagne and so prepares the destroyer for a life at sea. In that moment the destroyer slips, slides down smoking ways, and makes her bow to the land. The builder's worries are over for a time. If she had stuck, it would have been a matter of seven weeks to build the ways up under her for a second launching.

But she hasn't stuck. She is in the water with all her flags flying, and presently she is ready for her builder's trials. Yard mechanics, a set of superior ragamuffins with no sense whatever of sartorial elegance, swarm aboard her. This is not navy style, but these men know the engines because they have built them into her. Deck officers say that practically all the nuts are in the engine room, and they may be right. Engineers retort that deck officers are dreamers and stargazers, paradoxically charged with the duty of keeping the engineers from seeing rocks come through her bottom. The engineers are, nevertheless, proud of the destroyer's beauty and bright burnish. They grumble if brass valve wheels are substituted anywhere for stainless steel. A smutted oiler points out that the rails to the bridge ladder are not welded. They can be taken off and put against a buffer in the machine shop, whence they return as bright as icicles.

The screws are turning over now. Deep down in green water, milky clouds are stirred up by the wheel motion, and pour toward the surface. The destroyer gathers speed. Soon she is going fast for the first time. All her thousands of horsepower develop at once, without hitch, as if the ship had been at sea a year. Science has known how to forelay perfectly for this marvel of motion. Nothing has been left out of her, the landlubber supposes. She has neither a nut too many nor a blade too few. She is the last word in modern precalculation.

Now she is "shaking the knots out of her," as sailors say. Her wake is a rooster's tail, a lacy dome of threshed water made by the infolding and braiding and shooting up of the two streams thrown by the powerful screws. Back of this dome is the wake, a seething white band on the blue September sea. Wave-shapes are opened out like flower petals by the destroyer's rush. On the starboard beam, a white bird flying close to the water seems to compete with this speed, holds its own for a time, then slips back. The destroyer forges ahead; the bird tosses astern.

A foreman standing near the skids for the depth charges says that he has performed his part of this miracle with a gang of farm hands and clam diggers. These, if they are men of horse sense, do better than men who have a smattering of garage mechanics, for example. The former have nothing to unlearn. Each has his small part to perform. If the threat of war ends, back he goes to his clams. No more of these magic days in the inspirational company of one of the fastest ships in the world, with an engine almost as delicately complicated as a human brain.

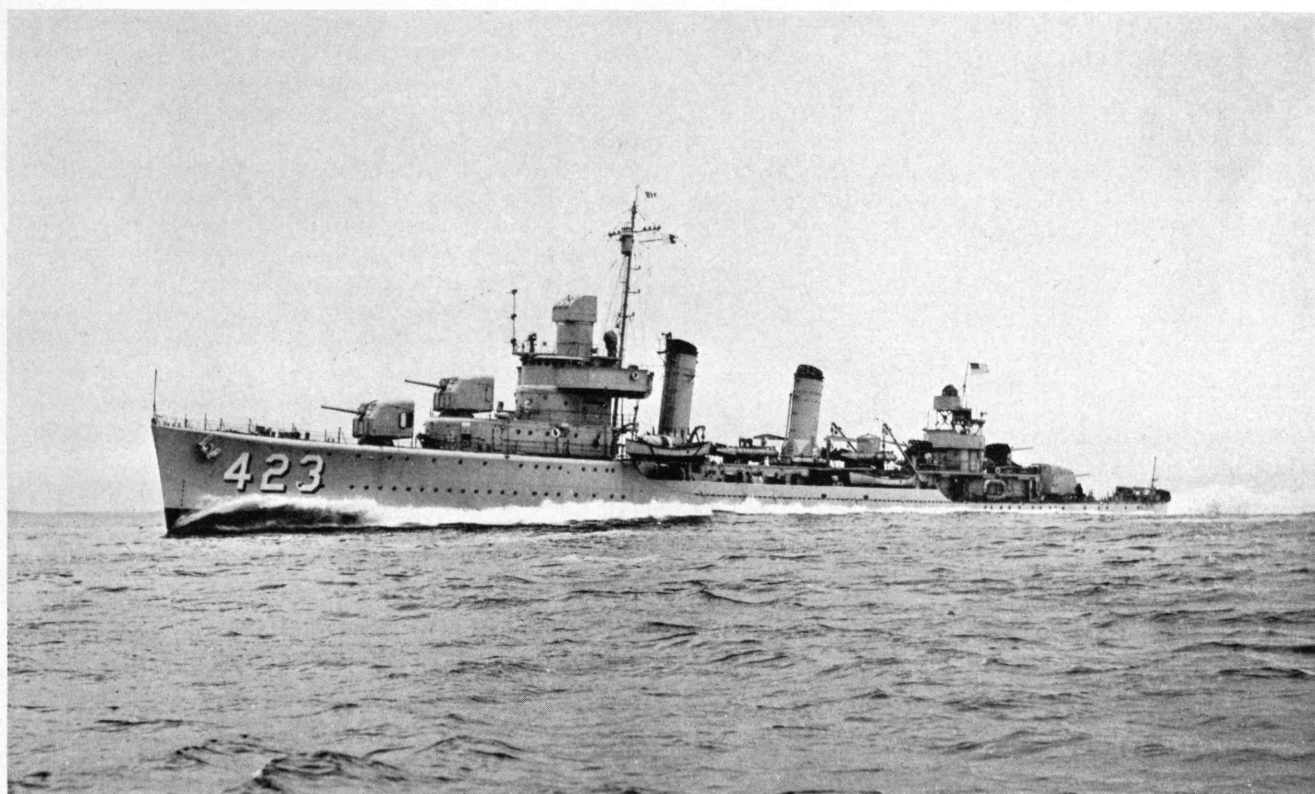
The builder on the bridge points out a deck hand with a rag round his finger. "We take the best of care of the men. Their orders are to bring the least infection for treatment. Safety first. We are building a destroyer for wholesale killing, and we must think of the health of our workmen."

Everything is provided for the comfort of officers and crew. Yellow hardwood settees are screwed port and starboard against the deckhouses, so that the men can watch the poetry of the seas. There's a swivel chair for the pilot in the wheelhouse. The ship steers like a charm, with none of the old-fashioned struggle at the wheel. Foolproof devices in spots all but do away with the need for a brain. Even the galley is a work of art. There the chef will take the cover off a thirty-gallon steam-jacketed kettle and show you the king of all fish chowders with a three-pound lump of butter melting in it like the sun trying to burn through a fog. All cooking equipment is electric. No old-fashioned coals to spill out of a stove in a seaway. No coal to stoke in the fireroom either. Even the fo'c'sle head has less grief than of yore. The windlass squad is letting the anchor out in sixty

fathoms. A lean fellow in a black shirt crouches, watching the links flee away from the wildcat. He sees the colored link when no ordinary eye can mark it, waves his arm. Instantly the anchor is snubbed, stopped in its plunge. It comes up as easily. A steam windlass does the work. Once this was agonizing, and it took a windlass chantey to get the anchor up at all. Now there is only a group of silent men with watches in their hands, counting the seconds of elapsed time for windlass performance. The song is out of men's throats and has got into the destroyer's boiling compulsions. The music is only the music of the spheres.

In the wardroom, where sheets of brown paper are laid over the transoms and on the new table top, some technicians are lounging around. They are arguing about blueprints, under the eye of a naval representative whose duty will be to accept or reject the destroyer, or at least to make the recommendation to the naval board. The navy man's voice is sharp and accurate; he never hesitates, is never at a loss for a fact or a figure. His naval superiors seem to surpass him only in their possession of a sense of humor and in the fact that they are, after all, older and mellower men, who deserve a certain amount of reverence for their past performances.

The builder's technicians, although not quite so articulate, do not lack a practical grasp of the immense coil of facts that make the functioning of such a ship. The naval authority is alert and prideful, snaps out his judgments, forces the facts to make a pattern round him like iron filings round a magnet. This is his big time. He is certifying a destroyer — an important responsibility. If there is a war, destroyers may average two battles apiece. The average fighting time (*Continued on page 325*)



Destroyer 423, U.S.S. Gleaves, built by the Bath Iron Works Corporation, pictured during a trial run

Douglas



# "Them As Has, Gits"

## *Jet Propulsion, the Rocketeer's Delight, Offers a Bonus of Added Speed to Airplanes Which Can Move Fast Enough to Take Advantage of It*

BY PAUL COHEN

**A**S Buck Rogers' experiences indicate, there's nothing like a rocket ship for getting around. The jets of hot gases from which rockets get their motion are the world's simplest and lightest prime movers — if one forgets the little problems of keeping them continuously supplied with fuel and oxygen. Instead of losing power at high altitudes, as does an internal-combustion engine unless supercharged, a nozzle can be made to increase thrust as air pressure drops. The thrust would reach its theoretical maximum in a vacuum. In fact, Mr. Rogers has chosen about the only device which, even theoretically, could propel him through interstellar space; for, to paraphrase Newton, you can't get anywhere unless you are pushed, and in this respect the rocket is always self-contained. Wherever it goes, it carries with it something to kick it forward — namely, the gases which are blasting backward from the nozzle. Although a nozzle will yield as much thrust when

standing still as when moving, for which reason it is being seriously considered as a lightweight auxiliary power source in getting heavily laden planes off the ground, the work it will do per unit of time is obviously directly proportional to the velocity of the nozzle. Thus, a nozzle delivering a 1,000-pound thrust but anchored in a frame, although impressively noisy, is doing no useful work. The same nozzle pushing a rocket forward at 400 miles an hour, however, would be delivering slightly over 1,000 horsepower and would still be far below its maximum output.

Unfortunately for rocketers and others who would like to make immediate use of jet propulsion, the efficiency of a jet as a propelling means — that is, the amount of work it will do for a given amount of fuel — continues to increase more or less indefinitely with speed. Except for the frictional resistance of the air or other medium through which the rocket ship must travel and the weight of fuel which the ship can accommodate, there are scarcely any restrictions on theoretical top speed and efficiency. Since the thrust of the nozzle remains the same regardless of the nozzle's velocity, the nozzle can continue to accelerate a rocket after the rocket is traveling faster than the gases leaving the jet. These gases, incidentally, develop speeds of 5,000 feet a second and up — a long way up. With efficient fuels — for example, gasoline and liquid oxygen — jet velocities of 12,000 feet a second have been obtained. By comparison, a plane with a top speed of 400 miles an hour, which necessarily spends much of its flying time in taking off, climbing, and cruising at considerably less than top speed, can reach a velocity of only 587 feet a second. Regardless of other difficulties, therefore, and one can mention the metallurgical problems of handling intensely hot gases for long periods of time, the primary barrier to fully effective application of jet propulsion to planes is their present "low" speeds.

Nevertheless, jets of hot air and gases expanding through nozzles are contributing significantly to the performance of hundreds of fast, heavily powered planes now in service. At the moment, these jets are purely auxiliary propelling means, their energy salvaged from the waste heat thrown off by the engine, but since the work these jets will do for a given amount of fuel increases directly with the plane's speed, and since plane speeds are still rising, it is foolish at this time to attempt to define the possibilities of jets.

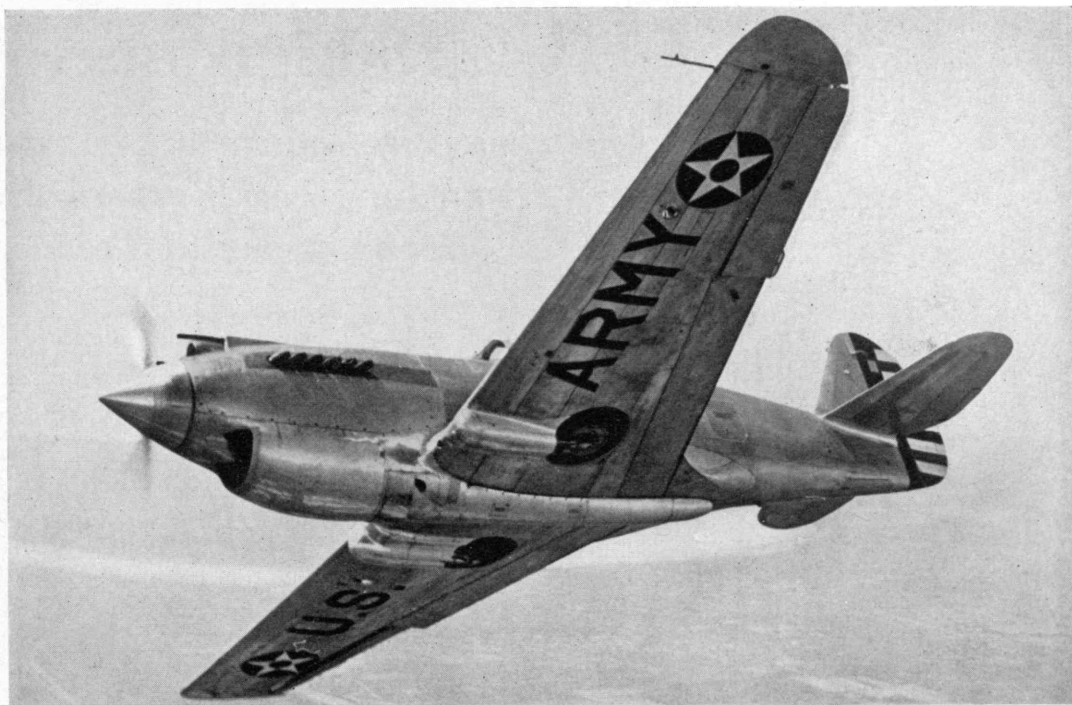
Of the energy available from the fuel, the modern airplane gasoline engine delivers about a third to the propeller. Somewhat more than a third escapes through

*Graceful and sturdy, yet limited in diameter and in number of blades, propellers are having trouble absorbing the great amounts of power that present engines can produce.*

*Raymond B. Collier, '20*



*A fast American pursuit plane — the Curtiss P-40 — in flight, its external ducted radiator on display*



*Curtiss-Wright Corporation*

the cooling surfaces, and the remainder is discarded in the exhaust. The engine designers find that they must pay just to lose energy: Cooling systems add materially to weight and cause a very substantial drag; exhaust manifolds add weight, create a hazard, and cause some drag. As engines get bigger, speeds higher, and planes cleaner, the radiator surfaces become an increasingly important source of air friction. Perhaps 5 to 10 per cent of the power of a fast plane may be spent in dragging the radiator through the air.

One means of salvaging a portion of the energy escaping with the exhaust has been available for some years. This is the exhaust-gas turbine, almost invariably used to drive a supercharger. First applied on marine Diesel engines, the turbine-supercharger unit has several strong features to recommend it. No additional horsepower and therefore no additional fuel need be expended to compress the intake air. Because the turbine, like the supercharger, is a high-speed device, the two can be coupled directly together. Since the turbine spins faster as the air pressure drops, it will give a stronger supercharging effect at higher altitudes, where it is needed. Nevertheless, the high temperatures of the exhaust gases create such severe conditions for the blades that not all consider the turbine to have the reliability required for aviation duty, and the superchargers for many engines are still gear driven, at a cost of perhaps 150 horsepower for a 1,000-horsepower engine.

With gear-driven superchargers the exhaust gases, amounting to perhaps 130 pounds a minute for a 1,000-horsepower engine, may still be utilized, and in a most direct and simple way. By relatively minor changes of the manifolds, the gases are made to escape in a rearward direction through nozzles which expand the gases down to atmospheric pressure and in so doing greatly increase their kinetic energy. A forward thrust is thus created, and for ships flying at 400 miles an hour a 6½ per cent increase in maximum power is claimed, equivalent

on some planes to an increase in speed of from ten to twelve miles an hour. Such exhaust ejectors are now being installed on a majority of British service planes and on many American models. Further increases in speed should follow improved manifold design and higher back pressures. Although raising the back pressure lowers engine output, it appears that the maximum total power from engine and exhaust jets at high speeds will be reached at levels of back pressure higher than those used at present. But, as previously pointed out, speed is of the essence. For speeds under 350 miles an hour and horsepowers less than 1,000, exhaust ejectors appear of little value. "Them as has, gits."

About the only drawback to the use of exhaust ejectors is the glare of the escaping gases, which tends to blind the pilot, particularly during night flying. If the manifolds are surrounded with a duct of cooling air, however, as they frequently are in order to lower their temperature and therefore the rate at which their thin-gauge walls are corroded, the glare is reduced and an added thrust obtained. The cooling air, entering through a diffuser, is somewhat raised in pressure. It is then raised in temperature by the hot surfaces of the manifold, and finally is expanded through a nozzle, leaving the duct with more momentum than it had when it entered.

The principle involved is precisely the same as that now utilized in ducted radiators. In 1935, F. W. Meredith pointed out the possibilities for increased performance residing in the fact that if air is admitted into a duct at high speed, slowed down (and therefore raised in pressure) by means of a diffuser, heated, and then expanded to its original pressure through a nozzle, it leaves the duct with greater momentum than it had on entering. In other words, a thrust results. These conditions are found ready made in the radiator units for liquid-cooled engines. Since the drag of an object increases with the square of its (Continued on page 324)



# Craftsmen at Work

## *Sketches from the Records of a Medieval Home for Aged Workers Are an Iconography of Trades*

BY LEROY L. THWING



THAT a sketch is better than a many-worded description, or that a picture of a workman's tools tells more about them than does an enumeration, is unnecessary to explain to engineers. Such pictures were never common, however, until the development of photoengraving processes. Those few which do exist are, therefore, of unusual interest. Prior to the so-called *Book of Trades* — two of which date from the Sixteenth Century — pictures of a craftsman working at his trade are extremely rare, except for those which come from Egypt and are two to five thousand years old. The Egyptian pictures have been preserved because they are cut, carved, or painted on stone surfaces of such size that they are not easily defaced or destroyed. Similar pictures may have been drawn, painted, or woven as prolifically on less durable materials during the first thousand years of Christendom, but almost none have been found.

Such pictures as we have from the Eighth Century to the Fourteenth Century are the illuminations and miniatures from the manuscripts of the period. Most of these are on religious subjects, and pictures suggesting crafts — even pictures of Noah building the ark — are hard to find but do exist. From this period also come a few engineers' sketchbooks, such as that of Wilars of Honnecourt, but none of them has pictures of workmen and their tools.

With the exception of Egyptian and Assyrian wall paintings and carvings, the oldest collection of pictures of craftsmen at work at their trades is found in the records of a Fourteenth Century German home for aged workmen, the Mendel Foundation at Nuremberg. The home was founded in 1380 by Konrad Mendel as an asylum for twelve old, but not incapacitated, craftsmen. In the 167 pages of the manuscript are sketches of about three hundred "brothers," dating from 1380 to 1535. Unfortunately the first four pages of the manuscript are missing, but there are several sketches from the Fourteenth Century. With each is a notation of the brother's name, number, trade, and the year of his death. This valuable manuscript is preserved in the Stadtbibliothek at Nuremberg. A few of the sketches have been reproduced by F. M. Feldhaus in *Die Technik der Vorzeit . . .* and in other of his instructive publications on the history of tools and utensils.

One of the oldest of the sketches (Fig. 1) is that of the sixteenth brother, a thimble maker, or *Fingerhuter*, who died about 1382. He is pictured with a pump drill, boring out the little sockets in a thimble. For the operation of this drill the shaft was turned a few times by hand to twist the cord around the shaft, thus lifting the crossbar. When the operator pressed down sharply on the bar, the cord untwisted and rotated the drillshaft. The momentum of the cup-shaped flywheel wound the cord again, and the drilling proceeded rapidly, cutting small holes. This type of drill was described as early as the Eleventh Century and is still used to drill china and porcelain.

Three wiredrawers, or pinmakers, died at the home, and the three sketches of them illustrate as many different methods of wire drawing. The first (Fig. 2) shows a workman pulling heavy wire from a coil through a series of holes in a steel drawplate. Note that he is seated in a swing, which permits him to draw two or three feet of wire without shifting his grip with the tongs. Details of this sort inspire our confidence in the artist who portrayed them. The next sketch (not shown here) illustrates the second process: the wire being drawn through another plate onto a spool. The final drawing (Fig. 3, about 1396) was by stretching only; no drawplate was used, doubtless for fear of breaking the wire, which could not have been of

1. A thimble maker. 2. A wiredrawer. 3. Final drawing of wire. 4. A joiner. All from Feldhaus' *Die Technik der Antike . . .*, copyright Akademische Verlagsgesellschaft Athenaion.

uniform texture. The art of wire drawing is much older than any sketches, but these are the oldest pictures showing the process which have survived the hazards of time.

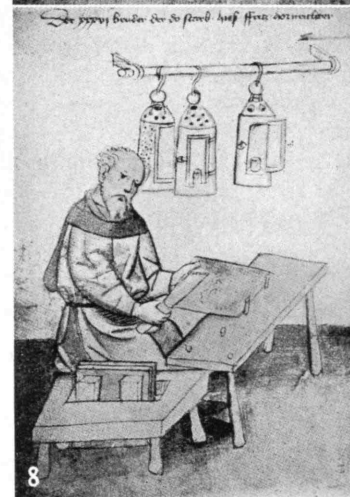
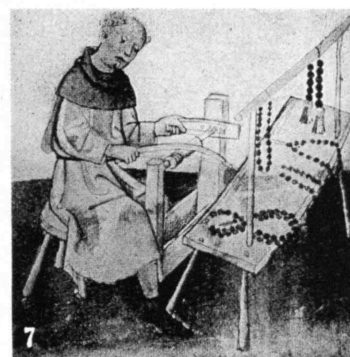
In Fig. 4 a joiner is at his bench with its stops, planing a plank. His position and that of his right leg suggest that some liberties have been taken to make the artist's task easier. The plane and saw are types used for hundreds of years both before and after 1400. The blade of the saw is tightened by a twisted rope. The chisel is made in typical medieval pattern. The chest with its fleur-de-lis strap hinges and the small cupboard are the oldest pictures of such furniture known to the writer.

The men shown in Figs. 5 and 6 are pewterers. The first shows the casting of a flagon, or the removal of one that has already been cast from the lower half of the mold. (These operations were naturally not simultaneous.) The square pit in the floor is presumably filled with molten metal. In the other portrait the finishing process is shown. This involved rough turning with a hand tool and finishing with a burnisher to remove the toolmarks. (The man who used the tools is not shown.) This kind is typical of early lathes for turning fairly good-sized work. Bells were finished on similar lathes. Wood was turned on a pole lathe, such as that illustrated in the January, 1933, Review (page 135). One of the brothers, who died in 1395, was a turner, but his picture has never been reproduced.

A lathelike device is shown in Fig. 7. This is a *Rosenkranz*, or rosary maker. The cutting tool, a combination drill and hollow mill, is rotated by the bow. As the tools probably cut equally well in both directions, the work progressed quite rapidly. The headstock of this lathe is fixed; the footstock is pivoted at the bottom and, being pressed by the operator's knee, feeds the tool into the work. The first operation is to drill a hole through the stock and, at the same time, mill out half of the bead. After one side has been completed, the strip of wood is turned over and the other halves of the beads are milled out. They may have been finished on an arbor with sharkskin or shave grass. It is said that the Dutch in New York set up lathes to make wampum to trade with the Indians. If so, the beads were probably made by a similar process.

A forgotten trade is that of the horn breaker, illustrated in Fig. 8. The tip was sawed from a cow horn and the hollow remainder split along one side. This was soaked in hot water and held over a bed of charcoal, which softened it so that it could be split into thin sheets for windows and lanterns. These sheets were flattened between two boards in the press shown in the foreground. The pressure is by wedges. Figure 9 shows a ropemaker at work. The apprentice who put the twist into the rope is not shown. Figure 10 is a *Schlosser*, of which the nearest English equivalent is a locksmith. Here he is filing a lock held in a vise tightened by a screw. The wrench is lying beside it. It will be noted that he is holding his file with the thumb up, in the manner taught to generations of Technology men by the late well-remembered "Pop" Smith.

These pictures of medieval craftsmen are unique. It is doubtful if anything as good will be found in the future. The artist who drew these sketches lived with the men he portrayed, and many little details show that he watched them at their work. Later artists were farther removed from workshops, and some of their technique is questionable, but these Fourteenth Century "portraits" carry conviction of their accuracy. We are fortunate to have them.



5, 6. Pewterers. 7. A rosary maker. 8. A horn breaker. 9. A ropemaker. 10. A locksmith. Figures 6, 7, 8, and 9 from Feldhaus, copyright Akademische Verlagsgesellschaft Athenaion.





# A Pile Driver's Respects

## *The Practicing Engineer's Curiosity about Technical Education Should Be Given Direct Expression*

BY EDWARD H. CAMERON

IT is good logic to make a generalization and then to give the exceptions which limit it. Thereafter we may examine the exceptions, and, if they appear top heavy, we may revise the generality into something on which everybody should agree. Let's try this yardstick on the matter of how well the teachers in the schools and the engineers in the field are working together. Mutually complimentary relations

exist between the two groups. The professors pay the practitioners the high compliment of a deep interest in their accomplishments. To this the practitioners respond with a modicum of curiosity in the pedagogical methods of the schools — which is appreciation to a superior degree, when you stop to think. So everybody is happy. Dangerous generalizations, however, must be promptly hedged in with many limiting qualifications if misunderstanding is to be avoided.

We must state, therefore, that the interest of many teachers in manufacturing and construction developments comes from their personal concern in those developments, through consulting or administrative activities. And many engineers in active practice show deep concern in educational affairs, often occupying chairs in the schools. Furthermore, there may be some men in practice who are not content with the training of the young men who come to them from the colleges.

If the foregoing exceptions seem sufficiently heavy to endanger the generality, let us revise it. Everybody ought to agree that engineers in active practice should, by greater concern in scholastic matters, reciprocate the interest which the schools show in practical affairs. The practicing engineer's curiosity should be more earnest than that satisfied by a casual glance at the monthly alumni journal, and might well equal the deep concern which is immediately apparent when some alma mater's coaching staff slackens its efforts. The latter event often causes as much distress as the receipt of a carload of poorly fabricated steel. In both cases, the conclusion is that the offending shop should catch hell, as is proper.

Delinquency, though, is a serious charge, and it is in order that we engineers mend our ways. Let us adopt the useful dodge of taking the offensive by coming through with a few suggestions as to what we think ought to go into the making of a good engineer. What should the professors teach our future assistants?

First, consider the target practice. The ancient definition — schools are where the young idea is taught how to shoot — still holds. School targets are necessary, but they must be man-size ones. The ambitious student, as might be expected in this age of increasing ranges and velocities, demands at least a few pot shots at the often poorly defined and unstatic objectives that he knows must be scored on with reasonable accuracy later in his professional career. Practical subjects, we mean. The anchored targets of classroom range, secured by the careful suppression of gyrations due to factors that won't stay put in practice, are not sufficient.

But there's a limit to all things, and the instructor might feel justified in saying: "This school teaches the fundamentals of mathematics and other sciences, and the Good Lord knows that the knowledge thereof has become complicated enough. You'll thank us, ten years hence, for sticking to such fundamentals and agree that the practical training was properly left to the teachers who took you in hand upon your graduation. A pile-driving foreman, to whom Hooke's law has the ominous savor of a magistrate's court, can demonstrate to you in fifteen minutes such practical matters as how accurately a pile can be driven to plan dimensions. Our job is to teach you how many piles to drive, to what refusal they must be driven, and how to interpret the borings so that you may arrive at the proper decision in such problems."

To which the young man would politely say, "Nuts!" and his daddy, who is paying the bills, would back him up.

Thus a principle that many consider eminently sound, in view of the tremendously complicated state to which engineering science has advanced, has had to give way to educational concepts of a much wider scope. Others say that this is all to the good and that engineering education must not remain tied to the hitching post of the horse-and-buggy era. We outsiders don't know the answer to this one, of course. But we must agree that juvenile skulls have needed some forced culture to keep up with the procession in a generation or two of cranial evolution. In the language of the poet, slightly paraphrased, "still the wonder grows, that one small head can carry all he knows."

But we respect him! Older engineers, who, like the writer, have attended twenty-five-year reunions, are sincere in their respect for the scientific knowledge evinced by recent graduates (*Continued on page 318*)

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## *Practitioner and Professor*

# Sublicariis Aliisque

## *Curricula Can Be Adapted in Various Ways to Meet the Needs of the Times; One Method Is Analyzed*

BY WILLIAM H. TIMBIE

I AM glad Mr. Cameron used a Latin expression in his article on the opposite page, for he thus affords me an excuse to use a Latin title and give a sort of Classical flavor to a matter-of-fact account of one solution to the problem which he presents. This is the first practical use I have found for the long hours spent in the study of the language of Cicero and Horace. At that, I must confess I had to build up that word for "pile drivers." Apparently the prefabricated form was not on the Roman market.

Alumni interest in the policies of alma mater I don't doubt exists in plenty, but actual expression by an alumnus of interest in the educational policy and methods of the institution from which he was graduated is rare. Most alumni are concerned with the results only, and from time to time give us reports on the quality of our product, either raking us over the coals because the quality has deteriorated or praising us if they find an improvement.

Mr. Cameron's main thesis is that by some educational process the teaching staff ought to keep up to date in practical applications of the engineering principles which it is trying to teach, and in some way see that the students appreciate the connection between application and theory. Recognizing the fundamental difficulty which a school would encounter if it tried to teach an adequate amount of both theory and practice, he laments the failure of the schools effectively to attract the attention of the alumni to new educational methods, introduced as a result of changing industrial conditions, and to the educational principles underlying these changes. I agree with him as to the scarcity of this kind of information that actually gets across to the alumni. I also appreciate the great advantage which would accrue to a school if it could keep its alumni interested in, and informed on, these matters. After all, the greatest concern of an educational institution ought to be its educational principles and methods. Oddly enough, an educator loves nothing more dearly than to talk and write about the improved educational processes of his institution, but listeners are few, and readers — about the magnitude of the  $n$ th term in a vanishing series. Now along comes Mr. Cameron actually asking for it. The chance is too good to pass up; I'm going to have one reader anyway.

It was realized from the beginning that however well grounded in theory a technical graduate might be, he could not tackle effectively the engineering problems

of industry until he had also become familiar with current industrial practice. Accordingly, upon graduation a student usually entered an industrial organization as an apprentice. During this period the student's engineering training lay more or less dormant, however, and much of it was forgotten. As an engineer would say, there was too much slack and lost motion in the arrangement. It was evident that a student ought to be getting his undergraduate practical experience while acquiring his undergraduate theoretical education. The first attempt to combine the two was to transplant into the engineering schools representative specimens of industrial equipment and even of industrial production.

This policy was found to have several defects:

(1) The initial financial outlay would be extremely high if anything further than the fundamental shops were to be equipped.

(2) In a rapidly expanding industrial era the cost of keeping machines and processes up to date was prohibitive.

(3) Maintenance of the necessary industrial atmosphere was almost impossible in a school shop.

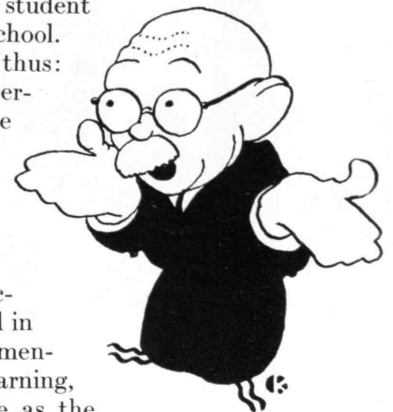
(4) It was necessary either to abbreviate greatly the theoretical content of the curriculum or to lengthen the time which the student would be required to spend in school.

Hence the problem boils down thus:

A young man goes to an engineering school solely for the purpose of acquiring the scientific habit of thought and knowledge of the principles and theories underlying modern industrial

progress, because it is extremely difficult for him to acquire them while he is employed in industry. But one of the fundamental principles of the process of learning, almost as universal a principle as the law of gravitation, is that no one can thoroughly grasp the meaning of an abstract theory until after he has had concrete experiences in its application. If the school takes the time to afford the student these necessary experiences, he must either go without much of the very education for which he came to the school or else remain in school a considerably longer time. It looked very much as though the embryo engineer just had to have his educational cake and eat it too.

Unsolvable as the problem appears to be, several effective solutions have been worked out, one of which is the co-operative plan. Probably because for the past twenty years I have been (Continued on page 320)



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## *Discuss The Teaching Task*

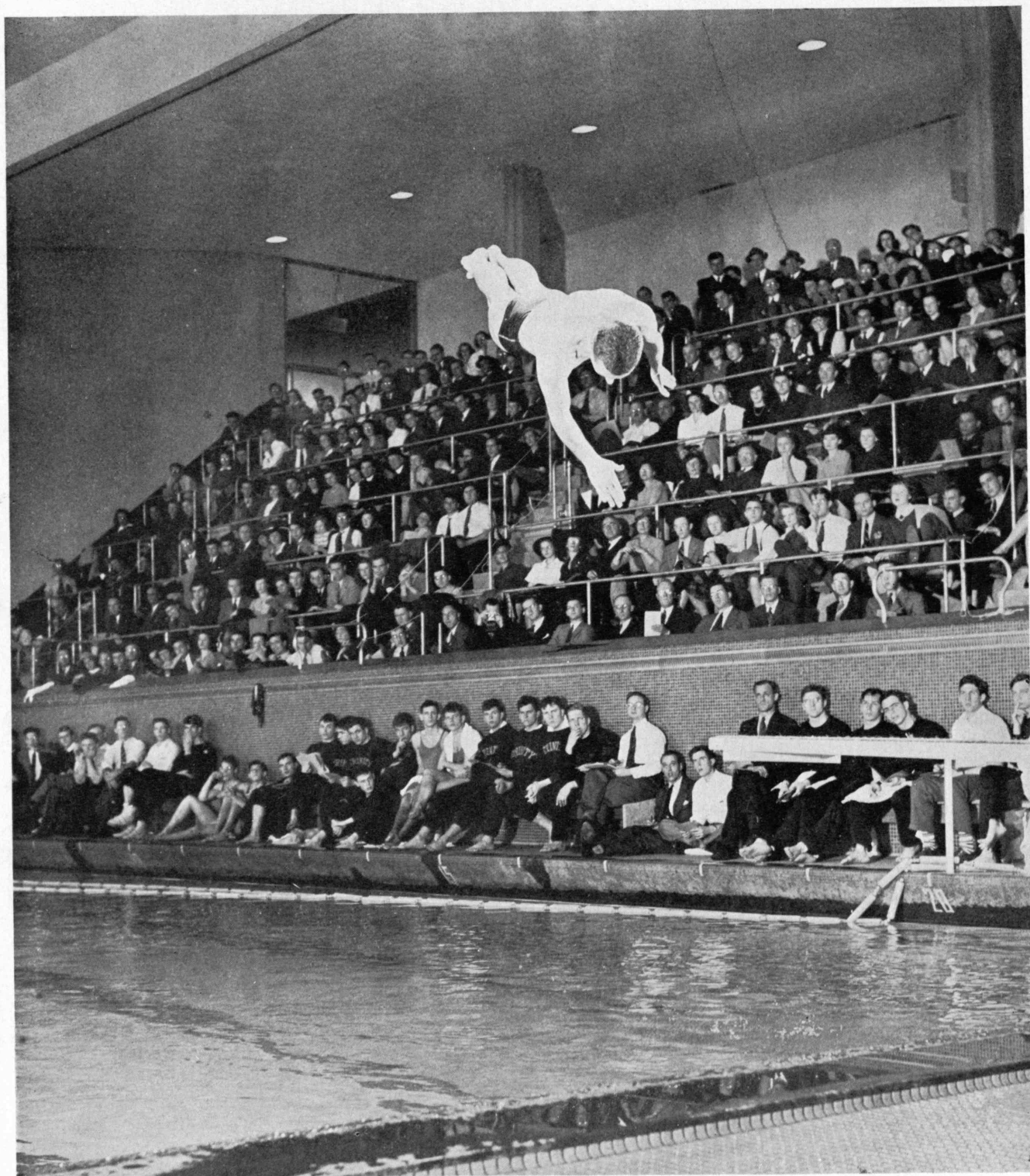


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# THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

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Harold E. Edgerton, '27

## LEVITATION OVER WATER

*This high-speed stop-motion photograph of David W. Howard, '41, captain of Technology's swimming team, who holds the national junior amateur high-board diving title, attests to the popularity of swimming, made possible by the facilities of the Alumni Pool Building. The photograph was made at the New England Intercollegiate Swimming Association championships held at Technology in March.*

## First Figures

**A**LREADY to Alumni has gone a preliminary report on the first year of the M.I.T. Alumni Fund, as of February, 1941, surveying the record that, four months before official closing day, had assured the success of the Fund as an annual activity. More Alumni have participated, the report shows, than in any previous fund- or dues-raising activity. On February 28, the date of the preliminary survey, 7,666 members — a quarter of the entire Alumni body — had approved the aims and methods of the Fund by means of their contributions. Total received to that date was \$60,991.21, an average contribution of \$8.49. Almost two-fifths of the total goes directly to the Institute for continuing projects, for student recreational facilities, and for free use under the direction of the Alumni Fund Board, of which H. B. Richmond, '14, is chairman. This auspicious start points to a future importance for the Fund well summarized by Mr. Richmond thus: "If precedent is a guide, the ultimate results of the Fund plan will be instrumental in keeping Technology in its position of leadership in the scientific educational field."

## "Our American Tomorrow"

**B**BROADCASTING over the network of the National Broadcasting Company on March 15, President Compton looked into the future, to see what may be scientifically in store for Americans. His address was as follows:

"Just to get started in our thinking about America tomorrow, suppose I begin by asking myself two very simple questions. For example, I ask, 'Where will Joshua Smithers be tomorrow?' Well, if I knew anybody of that name, and knew where he is today, and knew in what direction he is going and what is his method of transportation and something about his habits, I might make a fairly reliable answer to the question. But since I know absolutely nothing about Mr. Smithers and do not even know whether such a person exists, any answer which I might attempt would be worthless.

"But if I ask myself the same question about my friend Bradley Dewey ['09], I can give a much better answer. I know that he stopped in Washington yesterday and left today by automobile for St. Louis. I also know that he is an intelligent and purposeful man and a skillful driver. I feel very certain that tomorrow he will be well along his way to St. Louis. There is, of course, the chance that he may have changed his mind or had an accident with his car, but the chance of his not being well on the way to St. Louis is very small.

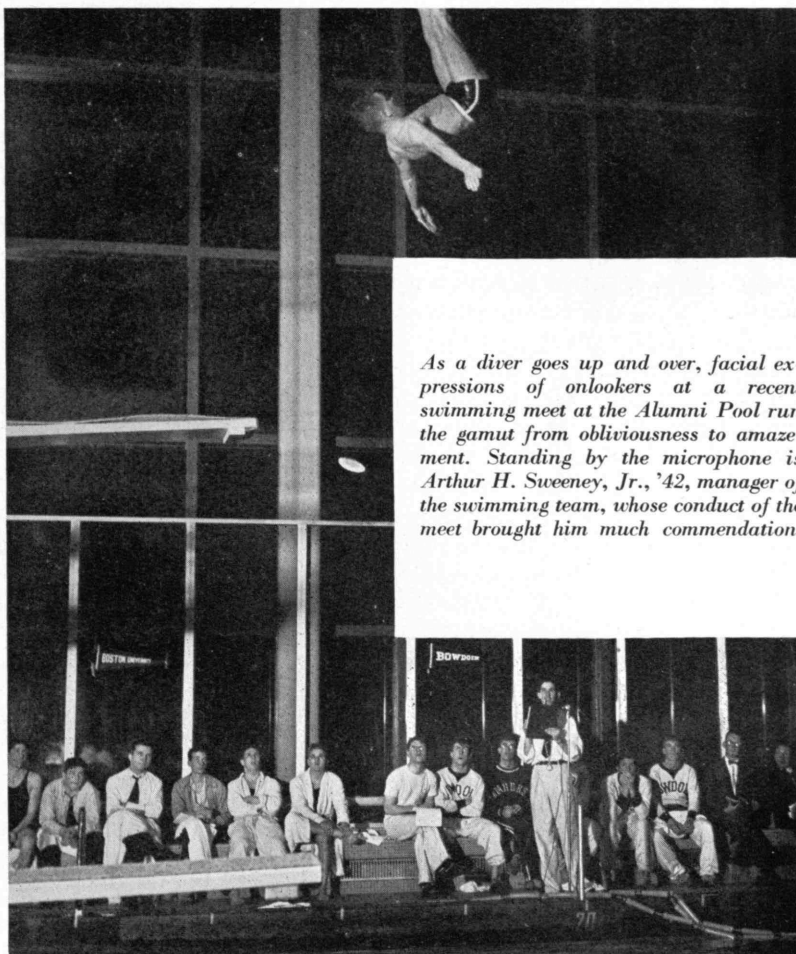
"In this same spirit, I believe that an intelligent answer can be given to the question, 'Where will our America be tomorrow?' — meaning, of course, five, ten,

twenty-five years from now. We first need to know where America is today, in what direction she is going, what forces are taking her along her path, and what is her character.

"Starting with today, we know that America is, in most respects, the envy of every other people on earth. Often we find fault with this or that condition in our country. But any useful judgment of America today must consider practical standards of comparison, and by the comparison with any other part of the world we have sound reason to be thankful and to have faith in the future.

"Natural resources? The most varied and abundant of any nation. Comforts of life? By all physical standards — such as heated and lighted homes, silk stockings and fur coats, automobiles and refrigerators, movies and radio, medical care and food supply — far ahead of any other people. Freedom of speech and action? Where else in the world today can you come as near to saying what you think or doing what you please — as long as you act decently; or where can you go ahead just as far as your ability and luck will take you — even granting that these situations are not perfect? So I submit that America starts today in a situation that should give us real confidence in tomorrow.

"In what direction is America going? Look for a minute at a few typical facts. The great chemical industry of our country, which vitally and beneficially affects almost every aspect of our lives, has, practically



*As a diver goes up and over, facial expressions of onlookers at a recent swimming meet at the Alumni Pool run the gamut from obliviousness to amazement. Standing by the microphone is Arthur H. Sweeney, Jr., '42, manager of the swimming team, whose conduct of the meet brought him much commendation.*



industries will be studied, with particular emphasis on the special technical problems which each of them involves.

The program on city and regional planning, which is sponsored by the Institute's School of Architecture and the American Planning and Civic Association and is to be held from July 7 to July 25, will be directed by Frederick J. Adams, Associate Professor of City Planning and head of the Course. Principles of planning will cover the objects and scope of city and regional planning and the elements that make up a comprehensive plan for the physical development of a city or region. Specific problems to be discussed will include transportation, housing, recreation, and zoning. The course in techniques of planning is designed to present the procedure followed by the planning technician—procedure including the surveys, preparation of the plan, and the problems involved in its execution. Planning administration will cover the principles of organization and administrative procedure in the carrying out of comprehensive plans and zoning ordinances.

The public health, school health, and health education program is offered to professional public-health and school-health workers. The program was arranged as a series of summer sessions, the first of which was given last year. This year's course, to begin June 30, under the direction of Clair E. Turner, '17, Professor of Biology and Public Health, will cover pathology, health education, and personal hygiene and applied nutrition.

Because of the many problems encountered in the mobilization of military forces and the concentration of civilians working on national defense projects, the Institute's program in public-health engineering, which begins on June 16, is of special interest. Candidates for this course should have basic training in biology and chemistry. The program will include sanitary biology, sanitary bacteriology, and sanitary chemistry. Civil and military sanitation will be dealt with in lectures, discussions, and field work treating of public-health engineering activities, including water purification, sewage treatment, refuse disposal, milk and food sanitation, as well as camp sanitation and other problems encountered in this field. Modes of infection, insect and rodent control, as well as housing will also be considered. The program will be in charge of Murray P. Horwood, '16, Professor of Bacteriology and Municipal Sanitation.

### Staff Appointments

GEORGE C. MANNING, '20, who served as associate professor in the Department of Naval Architecture and Marine Engineering in 1938 and 1939 and who had previously lectured in that Department, will rejoin the staff next September as an associate professor. He was graduated from the United States Naval Academy in 1914 and was awarded the degree of master of science at the Institute in 1920. Since 1933 he has been inspector of naval material in the Boston district.

James M. Austin, who joined the staff of the Institute as a research assistant last year, has been appointed assistant professor of meteorology. He is a native of Dunedin, New Zealand, and was educated at the University of New Zealand, from which he received the

degrees of bachelor of arts in 1935 and master of arts in 1936. After a teaching assignment in a New Zealand high school, he was appointed a meteorologist in the Apia Observatory in Western Samoa.

Another appointment to the staff of the Department of Meteorology is that of Margaret Whitcomb, '39, who becomes an instructor. Miss Whitcomb was awarded her master's degree in science last year and has been a research assistant in her Department.

### Nathan R. George, 1864–1941

NATHAN R. GEORGE, who until his retirement in 1936 had been a member of the teaching staff of the Department of Mathematics of the Institute for forty-five years, died on March 26. Born in Mendon, Mass., in 1864, Professor George studied at Phillips Exeter Academy for two years and entered Harvard University in 1885. Two years later he transferred to Worcester Polytechnic Institute, where he studied civil engineering for a year before returning to Harvard in 1888. In 1890 he was graduated from Harvard with the degree of bachelor of arts *summa cum laude* and highest honors in mathematics, and a year later he received the degree of master of arts. He was appointed to the staff of the Institute in the autumn of 1891. He was promoted to the rank of assistant professor in 1906, associate professor in 1913, and professor in 1935.

### Best of the Year

IN the annual awards of the Academy of Motion Picture Arts and Sciences, recently announced in Hollywood, the motion picture *Quicker'n a Wink*, which shows applications of the high-speed method of photography developed at the Institute by Harold E. Edgerton, '27, and his associates, Kenneth J. Germeshausen, '31, and Herbert E. Grier, '33, was chosen the best one-reel subject of the year. *Quicker'n a Wink* ably demonstrates the possibilities of clear and entertaining interpretation of the achievements in science and engineering. The picture has been shown in theaters throughout the country and has already been seen by several million people.

### Typographer

FIFTEENTH Century craftsmanship has been brought to life at the Institute in the creation by Dard Hunter, Jr., of the font of type displayed in the specimen page reproduced on page 313. Employing punch, matrix, and sliding mold in the technique of Gutenberg and his contemporaries as Douglas C. McMurtrie, '10, described it in The Review for November, Mr. Hunter has been at work on the design and production of this type over a period of five years. Its first showing was in the page here pictured, which was published from the Dard Hunter Paper Museum Press in a limited edition of a brochure entitled *A Specimen of Type: An Experiment in Typesetting by Employing the Same Methods and Materials Used During the Earliest Centuries of the Craft*.

Mr. Hunter, who is associated with his father in the conduct of the paper museum, cut the first punch for his type in 1936, when he was a student in the Cleveland

School of Art, under the guidance of Professor Otto F. Ege. The design of the letters seeks to recapture some of the spirit and quality of early type faces, particularly of those found in the incunabula. In the process of manufacture, each letter is cut backward in full size in the end of a steel bar. The bars, hardened, constitute letter punches, each of which is struck into a strip of copper, which forms a matrix. The actual printing types are cast in a hand mold, into which the matrix is fitted.

Before the type is again used, Mr. Hunter plans to recut various characters and to rejustify some matrices, seeking thus to bring the type still nearer to possessing, as the foreword to his brochure puts it, "some of the elusive characteristics that are so pleasing in many of the volumes produced during the first century of printing." How near some critics judge him to have come already is indicated by a statement of Edward Larocque Tinker in the *New York Times*, who describes the new type as "virile, handsome, agreeably archaic and full of character."

### Active Museum

THE Committee on the Technology Museum has recently presented a series of notable exhibitions revealing the rich resources of the Institute's various permanent collections as well as the broad scope of material which it is Technology's good fortune to have on loan from time to time.

On March 2, at a tea and private view given by the Friends of the Library, treasures from the Institute's Library, and marine water colors and rare Japanese whaling prints from the Forbes collection were exhibited. The water colors represented the best examples and the largest collection of the work of Benjamin Russell of New Bedford, whose portraits of ships were the fashion of the day among shipowners and ship captains. The exhibits of the Institute Library included the library of an engineer a century ago, showing books used by Loammi Baldwin, a Revolutionary officer and chief engineer of the Middlesex Canal. Other volumes marked milestones in the development of science, and there were a number of volumes on ships and sea lore from the Arthur H. Clark collection. The potter's art was represented by books and specimens. The Central Library contributed famous books and first editions on electricity and magnetism, historical prints and posters showing balloon ascensions, and books on the early history of charts and navigation. The humanistic aspects of an architectural library were shown in an excellent exhibition in the Arthur Rotch Library of Architecture, while the Dewey Library presented working collections of books on economics, business administration, industrial relations, and engineering subjects. Visitors to the Francis Russell Hart Nautical Museum were shown the large collection of ship models and other marine exhibits, including the Henry P. Kendall whaling collection. Special exhibitions of paper and papermaking and the graphic arts were shown in the Dard Hunter Paper Museum, and a supplementary exhibition of front-page typography, an exhibit from the American Institute of Graphic Arts, was displayed in the Main Lobby.

CASTRASVNTINITALIACONTRAPOPVLVMROMA  
NVMINETRVRIAEFAVCIBVS·CONLOCATA·CRESCIT  
INDIES·SINGVLOS·HOSTIVM·NVMERVS·EORVM·AVTEM  
CASTRORVM·IMPERATOREM·DVCEMQUE·HOSTIVM·IN  
TRA·MOENIA·ATQVE·ADEO·IN·SENATV·VIDEMVS·INTES  
TINAM·ALIQVAM·COTIDIE·PERNICIEM·REI·PVBLICAE  
MOLIENTEM·SI·TE·IAM·CATILINA·COMPREHENDI·SI  
INTERFICI·IVSSERO·CREDO·ERIT·VERENDVM·MIHI·NE

ANNO DOMINI 1485. QVO VSQVE TANDEM ABVTERE  
Catilina, patientia nostra? Quam diu etiam furor iste tuus  
nos eludet? Quem ad finem sese effrenata factabit audacia?  
Nihilne te nocturnum praesidium Palati, nihil urbis vigiliae, nihil  
timor populi, nihil concursus bonorum omnium, nihil hic munitis-  
simus habendi senatus locus, nihil horum ora voltusque moverunt?  
Patere tua consilia non sentis? constrictam iam horum omnium con-  
scientia teneri confurationem tuam non vides? Quid proxima, quid  
superiore nocte egeris, ubi fueris, quos convocaveris, quid consilii  
ceperis, quem nostrum ignorare arbitraris?

O tempora! o mores! Senatus hoc intellegit, consul videt: hic tamen  
vivit. Vivit? immo vero etiam in senatum venit, fit publici consilii  
particeps, notat & designat oculis ad caedem unum quemque nos-  
trum. Nos autem, fortes viri, satisfacere reipublicae videmur, si istius  
furorem ac tela vitemus. Ad mortem te, Catilina, duci iussu consulis  
iam pridem oportebat, in te conferri pestem quam tu in nos iam diu  
machinaris. An vero vir amplissimus, P. Scipio, pontifex maximus,  
Tiberium Gracchum mediocriter labefactantem statum reipublicae  
privatus interfecit: Catilinam, orbem terrae caede atque incendiis  
vastare cupientem, nos consules perferemus? Nam illa nimis antiqua  
praetereo, quod C. Servilius Ahala Sp. Maelium novis rebus student-  
em manu sua occidit. Fuit, fuit ista quondam in hac re publica virtus,  
ut viri fortes acrioribus suppliciis civem perniciosum quam acerbis-  
simum hostem coercent. Habemus senatus consultum in te, Catilina,  
vehemens et grave. Non deest rei publicae consilium, neque auctori-  
tas huius ordinis: nos, nos, dico aperte, consules desumus.

Decrevit quondam senatus, ut L. Opimius consul videret ne quid  
res publica detrimenti caperet. Nox nulla intercessit: interfectus est  
propter quasdam seditionum suspensiones Caius Gracchus, clarissimo  
patre, avo, maioribus, occisus est cum liberis M. Fulvius consularis.  
Simili senatus consulto C. Mario & L. Valerio consulibus est permisa  
res publica: num unum diem postea L. Saturninum tribunum plebis

M.I.T. Photo

*Reduced facsimile of a specimen page showing the type designed  
and made by Dard Hunter, Jr.*

Patrons for this very interesting event were President  
and Mrs. Karl T. Compton, Dr. and Mrs. Harlow  
Shapley, Mr. and Mrs. Milton E. Lord, William S.  
Newell, '99, and Mrs. Newell, Mr. and Mrs. Carl T.  
Keller, Edwin S. Webster, '88, and Mrs. Webster, Wil-  
liam H. Coburn, '11, and Mrs. Coburn, and Raymond  
Stevens, '17, and Mrs. Stevens.

The pourers at the tea, which was attended by more  
than three hundred guests of the Friends of the Library,  
were Mrs. Alvan T. Fuller, Mrs. Gardiner H. Fiske,  
Mrs. Charles E. Bacon, Mrs. A. Farwell Bemis, Mrs.  
Coburn, Mrs. Compton, Mrs. Robert Cushman, Mrs.  
Lewis Davis, Mrs. Malcolm B. French, Mrs. Frederic  
R. Galacar, Mrs. Joel E. Goldthwait, Mrs. J. Rhyne  
Killian, Mrs. Eugene C. Hultman, Mrs. Harold F.  
Kellogg, Mrs. Stevens, and Miss Virginia Stone.

An exhibition of special interest shown in the rotunda  
of the Rogers Building is a collection of delicately  
executed ivory panels carved by Brainerd B. Thresher  
of Cincinnati, whose son, B. Alden Thresher, '20, is  
director of admissions at the Institute. Most of these  
beautiful carvings were exhibited in 1939 in the Palazzo  
Antici-Mattei in Rome, and in Florence and Venice,  
under the auspices of the Centro-Italiano di Americani.  
Mr. Thresher's work reveals a combination of Greek and  
Oriental influence.



## Toward a Philosophy

THE letter which follows, written by an Institute alumnus father to an Institute undergraduate son, is commentary on our times which The Review believes will be of interest and stimulation to other Alumni:

Dear Dan: Your letter, in pessimistic mood, has been received. I am glad that you wrote me thus, glad to have an insight into some of your doubts and uncertainties. You say that the world is cockeyed. You are impressed with the maladjustments of its economic life — the want, the unemployment, the labor strife. In the contemplative quiet of your college life you shrink from the thought of war and conflict.

I am not worried about you. These are perfectly normal doubts, and I can recall quite similar moods of protest on my own part. It is not an easy problem to find yourself and your task in life. And, though you underestimate your own ability, I would rather have you modest in that respect than too cocky.

But, while it may be perfectly natural to entertain these questions and doubts, it would be fatal to let them dominate you. Courage does not consist in *not* being afraid, but rather in conquering fear. So you must conquer these doubts.

It is a cockeyed world, Dan — though perhaps no more so than it has always been. Certainly it seems to be a less secure world than it was twenty-five years ago. Change — tempestuous and untamed — is in the saddle. However, it is perhaps a healthy change. In the very turmoil of our democracy an aspiration, an aiming point, is expressed. In Vincent Sheean's novel *Sanfelice* the most striking line seemed to me this: "The Revolution . . . is eternal: it is the lifting of more and more people to the surface of life; it is the one continuous movement of mankind, and there has never been, and likely will never be, any other." Lifting more people to the surface of life — perhaps that is a good summary of the underlying principle of change, of human aspiration, of progress — if we can believe that the world is progressing a bit from age to age. If only we can steer this change by means of peaceful evolution, not violent revolution!

Get hold, if and when you can, of some significant purpose in life, some aiming point which you can sight on for the long pull. In other words, go somewhere as hard as ever you can. It is well if a man finds such a purpose early, as it brings meaning and steadfastness to his life. But the goal may well be slow in the finding and yet all the clearer and more compelling later on.

Such a purpose, just for example, came to — —. A young teacher of economics, he was called to arbitrate a strike of agricultural laborers and found, as he said, that his textbook theories taught him nothing of the motives which animated those strikers. So he started over again to educate himself, in America and in Europe, working in psychology, in the social sciences, in human nature. Later, in the World War and up to his early death, by virtue of his preparation and with his insight and fairness he performed a very valuable service in helping to settle the extensive strikes in the great lumbering industry of the Northwest. I believe that had he lived he would have made a material contribution to what might be termed the art of human relationships — an art never more needed than today. Engineering, which you are studying, has to do with shaping the forces of nature to man's will. But a greater task is to understand and shape the forces of *human* nature — and to shape them, if it may be, by peaceful means.

And yet it's no good, Dan, to shrink from the thought of war and strife. As Oliver Wendell Holmes once said, the struggle for life is the order of the world, at which it is vain to repine. Man's destiny has been to fight. I have seen war's horrors; I hope you may escape them. But if war comes to our country, I would not have you away from it. And if we happily escape war, some teacher of the sort we still need, that we may not be smug, soft, comfortable — that we may be ready for danger.

My own philosophy of life has been boiled down to the point where the principal word in it is *courage*. Add to courage *fairness*, and you have, it seems to me, the two basic qualities of character, which all men admire. If there is one thought that I try to put over to your kid brother, it is the hope that he may be brave and square.

I have said that the world seemed less secure than formerly. Perhaps in the past we have stressed too much the factors of safety, security, permanence. Life, to be significant, must be something of an adventure. But adventure means risk; you can't play safe and have your adventure too. Perhaps only by a fearless acceptance of change and a stern preparation of our bodies and souls to meet it can we hope to abide the adventure successfully.

And last, I know that you, with something of your mother's sensitivity, will not fail to look for beauty along the way. Living is an art, and the search for truth and beauty will do much to enrich life.

I have every confidence, Dan, in your capacity for facing the adventure of life bravely and lightheartedly. Devotedly, Dad.



Five years ago at Saybrook, Conn., M.I.T. '16 met at its twentieth reunion, depicted here as reminder and as foretaste of the quarter-century gathering scheduled for Osterville, Mass., June.

## NORTON ABRASIVES

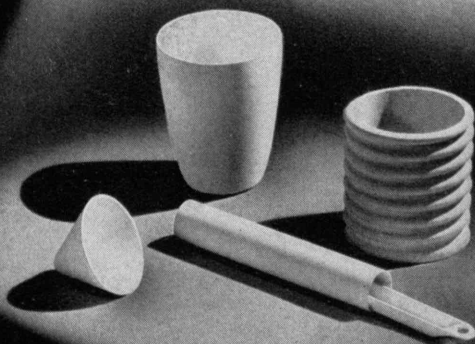
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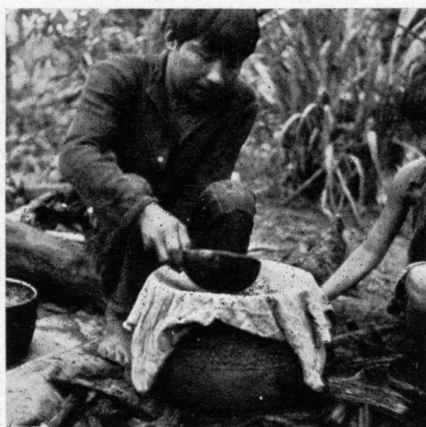
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*Curare, in the jungle, is made only by those who are well versed in the ancient lore.*



*Courtesy Henry Holt and Company*

## THE GENIE IN THE AMPOULE

*(Continued from page 298)*

fundamentals of primitive procedure. The jungle secrets of curare making have always been carefully guarded by the curare makers, who were, in the main, the tribal witch doctors, a brotherhood valuing keenly the psychological effects of awe and mystery surrounding their craft. Consequently, through primitive contacts arduously built up and maintained, we had to penetrate behind the curtains of witchcraft and general hocus-pocus in order to ferret out the grains of pharmaceutical truth which lay there.

Apart from the witchcraft side of things, the jungle end of the work was further complicated by the fact that the curare makers, whose only interest was to produce a death-dealing substance, frequently introduced into their "standard recipes" varying amounts of extraneous toxins, venoms, or even puzzling inert for ritualistic or lethal purposes. Hence one witch doctor would not necessarily duplicate his curare with precision each time he made it. Finally, add the fact that throughout every one of the known curare-producing regions in South America the technique and ingredients differ widely from witch doctor to witch doctor, from tribe to tribe, from region to region, and you can understand why the production of a predictable curare has presented overwhelming difficulties.

The history of the clinical use of curare was much more helpful and accurate, although until quite recently it presented a record of only mediocre success. Even the clinical results were, however, somewhat dubious, as a result not only of the variation but also of the smallness of each batch of curare. These factors meant that there was never at any single time enough of any one batch of the drug to enable biological standardization, that there was simply not enough curare available to the world for the carrying on of sustained work.

The terminal physiologic action of curare had long been known. The attempt to use curare clinically dates back to 1857, when its specific effect was discovered by the French physiologist Claude Bernard. The effect of the drug when injected under the skin of an animal seems to be directed selectively against the myoneural junctions of the motor end plates, an action which is measurable, in sublethal doses, in the ratio of the weight

of the drug used with the weight of the animal in which it is used. The drug's action, as has been said, leads to relaxation of the striated, or voluntary, muscles, because of the partial severance of the myoneural junction. The severance, in turn, is established by the abolition, to a certain degree, of acetylcholine, the chemical "mediator" which transfers or conducts motor impulses from nerves to the muscles at the myoneural junction.

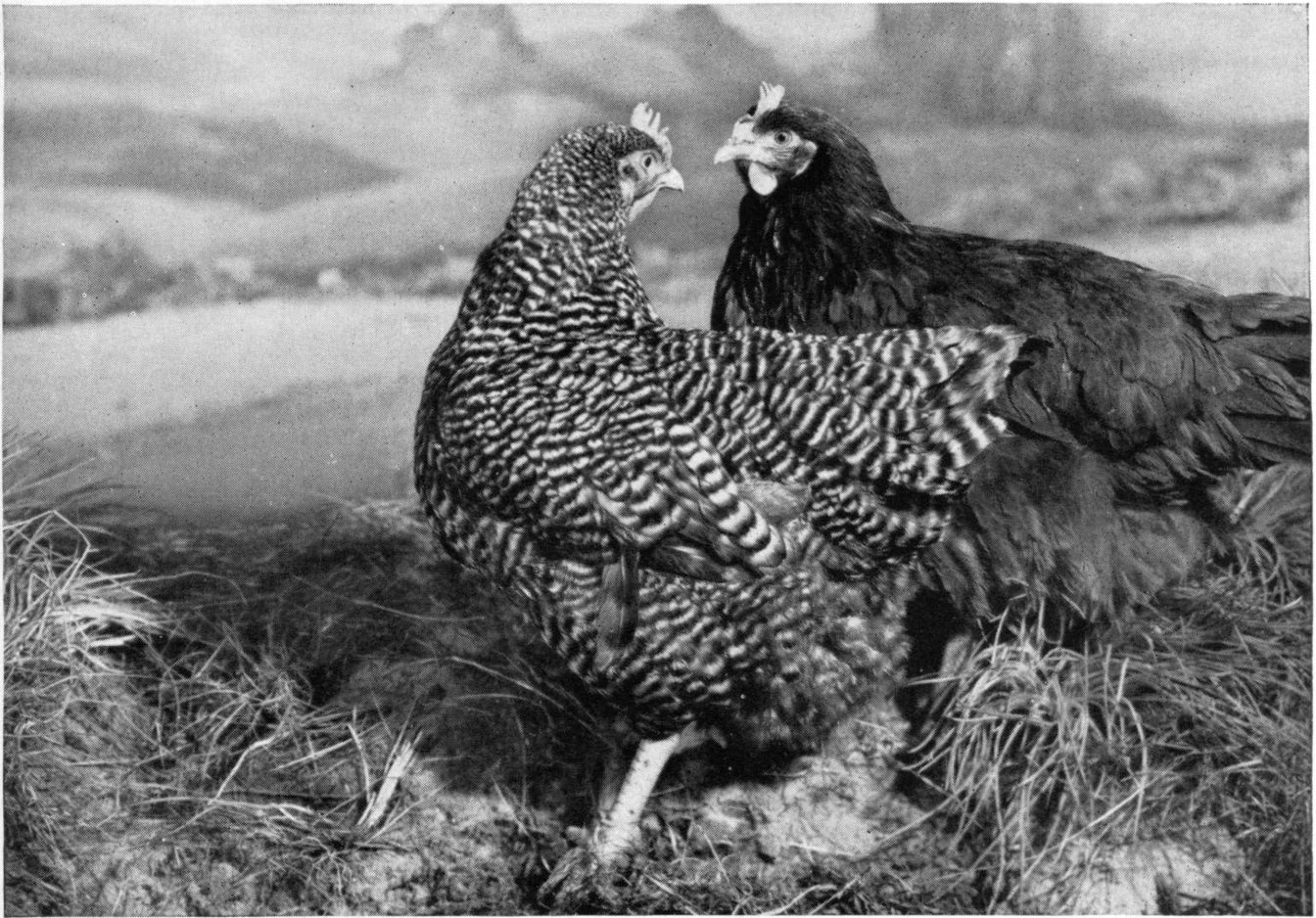
Used primitively, or carried to a laboratory extreme, relaxation may become complete, death supervening with the cessation of nerve impulses to the respiratory organs and eventual heart failure. Theoretically, and now actually, in clinical use the extent of relaxation can be controlled because of the predictable relation between the amount of the drug used — dosage depends on body weight and other variables — and the effect on the motor end plates.

Curare (granted a *predictable* supply) can be used to therapeutic advantage in many diseases involving a state of muscular hyperinnervation, as in spastic paralysis, and indeed has already been so tried with gratifying results. The same effect is desirable also when a state of conscious immobility is necessary, a fact which is the basis of the now successful and recognized use of curare in the shock-therapy method of treating certain mental diseases.

In addition to the problems relating to the production of the drug per se, we were faced with the definite *clinical* requisite of evolving a curare which would not give rise to unwanted side reactions, such as certain toxic states, urticaria, and so on, or act upon the junctions of the phrenic nerve and thereby cause respiratory failure upon administration. It was therefore necessary to evolve a curare not only capable of a sustained lissive, or relaxing, action but so peculiarly and highly selective that respiratory embarrassment could be predictably eliminated. Our work, both in the field and in the laboratories of civilization, was necessarily aimed at this objective as well as at all the other aspects essential to the production of a functional curare.

This article is hardly the vehicle for a detailed exposition of the long months of jungle work which went into the present curare or for explanation of how a technique of field research was gradually evolved out of years of previous jungle experiences and primitive contacts. In any event, the work was successfully brought to its present stage on our most recent South American expedition, which, in itself, was quite a party. When, after months of preparation, it was in the field, the expedition successively involved, in addition to a complete "top" personnel, thirty mules and six riding animals; seventy-five Indian porters with four subchieftains to look after them; a fleet of twelve dugouts, each canoe with its own crew of men; and an adequately housed expeditionary base, set up so as to include a complete field laboratory among hundreds of other articles of necessary equipment. Much of the success of the expedition was owing not only to the generous co-operation of the government of Ecuador, in which country our work was accomplished, but also to the friendship and warm understanding of His Excellency, Colón Eloy Alfaro, Ambassador of Ecuador to the United States.

*(Concluded on page 318)*



## “What’s a Road For?”

**F**OR a chicken a road is an obstacle to be crossed, but for a man it is a means for overcoming the obstacles of time and distance that tie him to one spot.

It is no accident that the roads that crisscross America form the greatest highway system in the world, that they carry more vehicles than those of any other nation. The roads are there because Americans are an adventurous people, seeking distant horizons and far places. They are there because America is a great continent with distances spanning one-eighth of the globe. They are there because no American is content to *be* less, to *do* less, to *have* less, for himself or for his family, than any other man.

But none of these things alone could have built those millions of miles of roads nor have put

millions of automobiles upon them. The roads and the automobiles are there because American industry, interpreting the needs of a people and giving them shape and form, made possible roads that the people could afford to build and maintain, automobiles that the people could afford to buy and run.

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*The making of curare is steeped with superstition and jungle ritual.*



*Courtesy Henry Holt and Company*

## THE GENIE IN THE AMPOULE

*(Concluded from page 316)*

The field work and the subsequent feverish stimulation of laboratory and clinical research are, after all, only part of the story of curare. Much pharmacological and clinical research and experimentation were necessary before the drug could ever be medically functional. For that vital part of the work, credit is owing to the widespread and exceedingly generous research efforts of a large number of institutions and men. Among the former, I should like to mention especially E. R. Squibb and Sons, who were willing to take what might be called a long chance on a drug which was half medical speculation and half a traveler's tall tale. Among the individuals were Dr. Walter Freeman of Washington, D. C., who first discussed with us the problem of curare and expressed his willingness to become a curare pioneer if we could solve the jungle end of things; Dr. Michael S. Burman of New York City, who, though his work was done before the advent of our curare, first successfully demonstrated and published the use of curare in the field of spastic paralysis; and Dr. Archibald R. McIntyre, chairman of the department of physiology and pharmacology of the University of Nebraska's college of medicine. In co-operation with E. R. Squibb and Sons, Dr. McIntyre performed a unique labor in establishing an adequate knowledge of the pharmacology of the erstwhile arrow poison.

The outstanding pioneer in the new curare work is Dr. A. E. Bennett, also of Nebraska, whose research and clinical practice have made possible the employment of curare in what is today its greatest and most widespread field of usefulness: the treatment of mental diseases. Curare can now be said to have salvaged shock therapy when it was about to be entirely abandoned because of the resulting dangers of grave trauma and to have remade this therapy into one of the most useful in psychiatry — a fact recognized when Dr. Bennett's work received a certificate of merit from the American Medical Association last year.\*

Thus it appears that still another predictable genie in an ampoule has been given to medicine — a genie

\* For a more detailed story of curare as well as further credits due the various workers in it, see Richard C. Gill, *White Water and Black Magic* (New York: Holt, 1940).

which issues forth in the unimpressive form of a few cubic centimeters of light amber fluid but which in the field of mental diseases miraculously produces something of greater worth than the legendary treasures of the genie of old: restoration of sanity and normal lives. Upon completion of further field work, which we hope will be accomplished shortly, we are now certain that this same genie of the jungles, still further tamed and even more predictable, will accomplish comparable miracles in other equally important fields of medicine.

## A PILE DRIVER'S RESPECTS

*(Continued from page 306)*

who are their associates. We are frequently put to it to match such knowledge with our own contribution in the form of years of active experience. If the professors will concede that the definition of "scientific knowledge" does not embrace how to snake a timber pile off the cars and get it into the ground, then we may repeat our phrase in the generalization: Everybody is still happy.

To offset our admission of delinquency in scholastic matters, however, we have still to present a few ideas on engineering education. Let us make use of the analogy of modern highway traffic and affirm what we think should be good construction and traffic rules for the high-speed artery of engineering education. Presumably, like our vehicular highway system, this educational artery is still under construction — curves are being eased, grades improved, and the like. We may assume that for safe educational traffic in the state of pedagogy there are standards of construction and operation comparable to the fine highway regulations of such states as Massachusetts, Pennsylvania, and Wisconsin. Let us speculate a little on these rules. We may expect to become either the beneficiaries or victims of the skill or unproficiency of those who set up the rules.

A minimum number of stop lights are undoubtedly planned, and cloverleaves and bridges will be plentiful. Thus the student bent on pure theory need not be held up by the left turns of those desiring to enter the lanes of "practical subjects" on the way. Or, bluntly, don't put too many practical subjects on the required list.

Brain knocks of impracticality on the part of the student will be carefully noted by the professorial driver. For the proper corrective gas, such students must be detoured promptly into one of the practical lanes. Or, bluntly again, you professors have a man-size job to keep a true balance between the theoretical and the practical. The measured-mile stretches which you lay out for the educational highway must register student brain velocities as divergent as the five-ton Mack and the streamlined Packard.

"Pile-driving Foreman Has Right of Way" will be on one of the many warning signs of the highway. Just a little tip to the professor that it is meet to render unto Caesar the things that are Caesar's, and to leave to the pile-driving virtuoso some of the more elementary aspects of the subject.

"New Construction Ahead" signs will warn the driver that he must go slow in localities where advancing industrial practices may soon require revision of class-

room theories. Don't teach the boy too many things to be unlearned later. Upon leaving the classroom for the factory, he becomes a modern exemplar of Galileo. Often he must try to adjust scientific formulas to manufacturing processes that have been going on for generations. Let his training imbue him with such deep reverence for the laws of pure science that he will stay with the occasional problem on which, apparently, science and practice fail to agree. Modern Galileos are reconciling such discrepancies, to the eternal credit of their instructors and to the benefit of both science and practice. Therefore let the rules of our highway quickly take away the license of the student driver who shows a tendency to accept too complacently the so-called practical solution which seems at variance with theory. Such a practical boy is headed for a smashup on some future road where the traffic is too fast for his sluggish reactions. Do him the favor of taking him off the road now.

"Slippery When Wet" signs will be for stretches where the instructor who thinks he is something more than a teacher holds forth. We recall two such gentlemen of twenty-five years ago: a classroom humorist and another so deeply engrossed in astronomical vagaries that a student had to be sharp to cull a few scientific nuggets from a matrix of pseudo humor or, sometimes, pure speculation. The instructor must remember that the student drivers are taking the rules very seriously; he shouldn't let them down.

Signs reading "Thickly Settled" will, presumably, be prominent in some sections. The metaphor becomes slightly mixed at this point, but the intent is that the student should be warned to restrain his ardor for exposition when he meets other drivers who, while not carrying on with full benefit of clergy, are nevertheless good, safe drivers — men who are getting reasonably satisfactory answers, that is. Tolerance for the opinions of others is important.

Brake-testing stations, of course, should appear frequently. The student will appreciate good brakes when he leaves the well-policed campus and meets the less predictable cops on the roads where he is to practice his profession. He will encounter many poorly lighted streets, and will have to make many quick stops and pauses to consult the maps he has with him from the last academic filling station.

Humanity demands many refreshment stations on the educational highway. Such stations will be under strict orders (with capital punishment prescribed for those who fail to comply) to serve man-sized portions of good old corned-beef-and-cabbage arithmetic, that the superiors under whom the student will later serve may rise to bless the cooks thereof. *Ut ameris amabilis esto*. Major portions of well-done English, well sauced with palatable punctuation, will be featured, and the general menu will be designed to maintain good digestive functions of expression.

(Concluded on page 320)

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## A PILE DRIVER'S RESPECTS

*(Concluded from page 319)*

The foregoing somewhat superficial counsels, which we might easily extend, are from the outside-looking-in point of view and would have greater value if flavored with a more intimate knowledge of the inside point of view. The lazy alumnus, of course, will say that this lack is the fault of the professors. They should broadcast their methods and aims more widely if they want more valid advice from the outside.

The colleges are trying hard to do so. But they must try harder. It is amazing, the integumentary thickness of resistant notions that twenty-five years of practice accumulate on engineering skulls that aren't so empty once you get through to them. You in the schools must concoct prescriptions which have more penetrative power. More news instinct in your broadcasts and more reader interest in your texts are other ways of putting it.

We see one example of this necessity in our popular technical journals, where job stories read in page units, as against modest post-card notices for scholastic aims and accomplishments, usually. Cause and effect are thus out of balance in the publicity of our profession. The completed job — the effect — is set forth in dramatic style, while the training back of the job — the cause — gets a brief notice that is apt to be fully as dramatic as the bill of lading for a crate of eggs. Let's agree that drama is not incompatible with professional dignity. Such drama is more difficult of attainment, true; but one of the things young engineers soon learn is that the degree of accomplishment is measured by the difficulties in the way.

Extremely hard, it must be, to keep curricula in step with advancing engineering science and to maintain the true balance necessary between purely scientific subjects and those dealing with their practical applications. More power to you professors in your endeavors to solve this difficult problem successfully. Perhaps the practicing engineer can offer some help. After all, we have something in common with you. We drive timber piles and the like into mother earth; you drive ideas into young men's skulls in order that they may make a living by doing things to mother earth and her elements.

Perhaps you pedagogues and we pile drivers can get together.

## SUBLICARIIS ALIISQUE

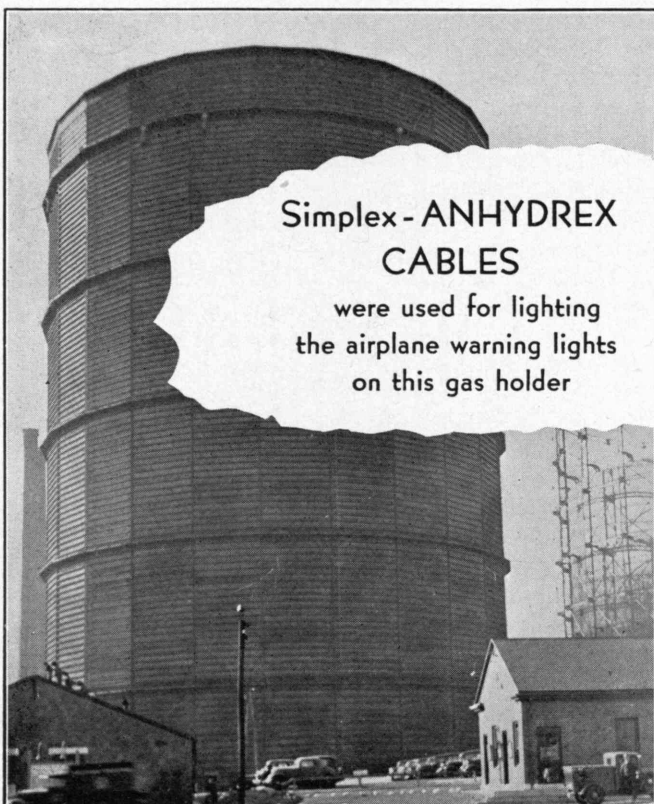
*(Continued from page 307)*

mixed up with this plan, I believe it to be the best. Not that I think all other methods should be abolished and all students put on the co-operative basis. I clearly recognize the good points of other plans and appreciate that to meet the aims and needs of all students, all effective methods should be employed. My purpose here, however, is to present the educational principles and procedures of the co-operative plan, and I'm going to stick to that job.

In 1906, Herman Schneider instituted at the college of engineering of the University of Cincinnati the co-operative plan of engineering education, whereby students alternate periods of study at school with peri-

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ods of experience in industrial plants. It is significant that this modern educational procedure was conceived and first put into operation in an engineering school. Only in comparatively recent years has the plan been applied to colleges of liberal arts. At M.I.T., six Departments are now conducting Co-operative Courses, those in Electrical Engineering having been in operation over twenty years. Many practical operating difficulties have had to be worked out, and at the present time a highly effective plan of operation has been developed, which makes each period of a Course of the maximum educational value, whether the student is at the school or at the plant of a co-operating company.

In the first place — and this point is fundamental — the co-operating companies recognize that industry shares an equal responsibility with the engineering schools in educating and training the recruits to its engineering force. Hence M.I.T. Co-operative Courses are not of the earn-while-you-learn variety. To be sure, the students earn wages and are paid wages, but the money earned is a mere by-product of the plan.

In the second place, note how each detail has been worked out entirely on the educational principle of making each period of the greatest possible educational value in preparing the students to understand clearly the industrial problems of their own era and equipping them to contribute to the solution of these problems.

In the third place, consider the detail of the length of the co-operating periods. If they are too short, a student cannot undertake a job of major importance, because such a job usually requires several months for completion. If the periods are too long, the student remains away from school so long that he gets out of the habit of study and loses considerable time in taking up the slack. The Co-operative Courses in Electrical Engineering and in Mechanical Engineering at Technology have standardized the "term-on, term-off" schedule for the following reasons:

(1) To make the periods spent at the Institute coincide with the regular Institute terms. The student thus becomes a part of the regular student body and is afforded an opportunity to enter into the regular campus activities. Experience has shown that the percentage of co-operative students engaged in important extracurricular activities is as high as that of students in the nonco-operative courses.

(2) To afford a four-month work period, which enables the student to be put on more important projects and to advance through the various stages of responsibility connected with them. On special assignments the period may be lengthened to eight months.

The student's habit of study is maintained while he is at work by his having to carry on regular classwork in the engineering subject which he would have been pursuing had he remained at the Institute. In general, the nonresident courses are conducted by engineers of the co-operating companies and have proved unusually effective. The instructors not only know the theory of the subject but also are able to point out numerous applications that are being carried on in the local plant right under the student's eyes. With two evenings a week taken up by recitations and two evenings by preparation, the student keeps (*Continued on page 322*)



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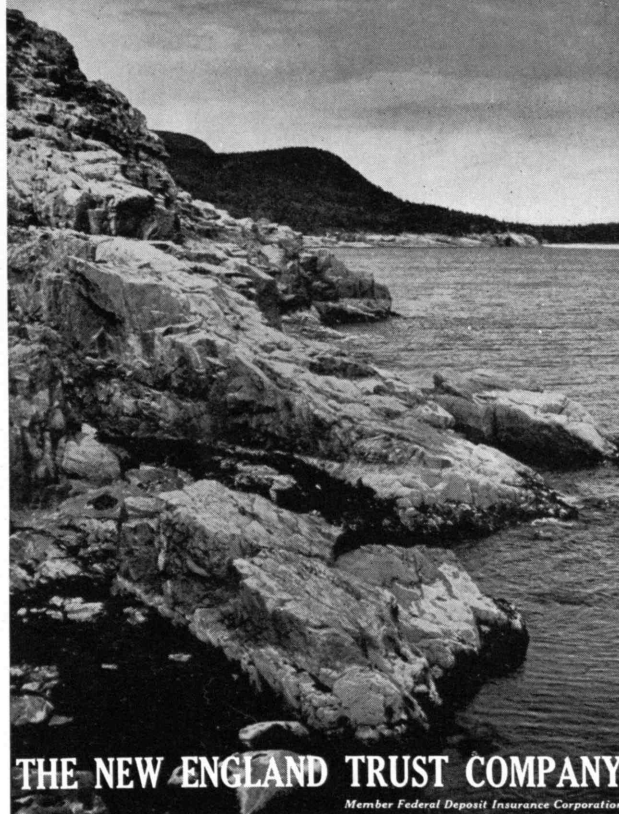
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## SUBLICARIIS ALIISQUE

(Continued from page 321)

up his study habits and still has three evenings a week for recreation. An experience of twenty years has proved that periods of intense mental activity alternated with periods of less intense study are surprisingly effective in developing mental powers, just as periods of intense physical exercise alternating with periods of lighter exercise (not complete rest) have proved the most effective routine for producing maximum physical fitness. This result is to be expected, and it is a matter of fact that toward the end of a term spent in intense study at the Institute, the student begins to look forward to the practical work at the plant. And after a term spent at the plant, he is just as anxious to get back to his studies at the Institute.

One outstanding need of American industry is for off-standard engineers. Industry does not want its engineers to be human bricks, just so long, so wide, and so high. All engineers must of course be trained to think with the same rigor. All must be thoroughly grounded in the same fundamental mathematics, physics, and economics. But, in addition, industry desires that each engineer should have some particular field in which he shows a marked aptitude and in which he has more than the usual knowledge common to all graduates. The Institute's Co-operative Courses, containing, as they do, the same basic scientific and economic principles and differing only in the specific applications of these principles, easily meet the first two requirements. And they go farther, because of the realization that arrangements must be made elastic to meet the need of the individual student. In all save the basic subjects, therefore, substitutions are not only allowed but encouraged. This provision does not mean that a student can scatter all over the lot, but rather that in the later years of his course he is encouraged to select his subjects of study for the purpose of arriving at some particular goal in some particular field where he is ambitious to work and for which his natural aptitudes fit him. Obviously, the extent to which such a policy can be pursued is limited by the size of the school and by the number of subjects it can offer.

This same educational principle is applied to the work at the plants. A plan of co-ordinated practice and study has been worked out in which the engineering practice constitutes regular courses, just as carefully laid out and supervised as the courses of study at the Institute. Moreover, just as at the Institute no two



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students need be taking exactly the same studies, so at the plant no two students need be working on just the same projects. A group of projects is first laid out which every student takes in order to secure an adequate knowledge of fundamental operations. Later the individual student is assigned to those special projects which will advance him most surely and quickly toward the goal at which he is aiming. The projects which make up a student's practical experience are arranged in rising order of importance and difficulty.

In order to establish and maintain proper co-ordination of studies and practice and to insure that the practice proceeds by steps requiring increasing technical knowledge and skill and more responsibility on the student's part, the student receives his industrial experience in the plants of one company only. Each company must therefore be of a size sufficient to offer the student a comprehensive experience in his chosen field. A student in the Electrical Engineering Co-operative Course, for example, receives his industrial practice with the General Electric Company, the American Telephone and Telegraph Company, the General Radio Company, the Boston Elevated Railway, or the Boston Edison Company. In the Mechanical Engineering Co-operative Course a student is with either the General Electric Company or the Boston Edison Company. An added advantage of the arrangement is that a young engineer comes to understand the company's policy and gets acquainted with the personnel. Thus he acquires a certain company loyalty — an all-important quality in the education of any young man.

Expressed in educational vernacular, the educational value of the intimate contact that the student has with industry develops not only in his learning how physical laws and theories are applied in practice but also in his dealings with workers and managers. Such contact acquaints him with the everyday applications of his studies in psychology, human relations, business law, and organization. It humanizes his humanistic studies as no amount of book learning could do. It fits him earlier to assume positions of responsibility, where judgment and the knowledge of how to handle men are important. Furthermore, he doesn't have to learn from costly experiences, after he is out of college, that, in engineering, every equation has a dollar sign attached to it and always contains a term representing the human element — two vital quantities often neglected in problems required in school. (Concluded on page 324)

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## SUBLICARIIS ALIISQUE

(Concluded from page 323)

For concrete evidence, let's look at the record. *The graduates report thus:* Learned what kind of work I liked. . . . Found out several kinds of jobs I didn't want. . . . Was able to judge merits and demerits of employment offers. *The students report thus:* Learned what an engineer does. . . . Learned to get along with all kinds of people. . . . Found out I didn't need much theory on any particular job, but what I did need, I needed mightily badly. . . . Learned that what I got out of a job didn't depend upon the kind of job but on what I put into the job. . . . The practical knowledge I have gained in this time amazes me. It is something no amount of classroom or laboratory work can teach. *The co-operating companies report thus:* Even during depressions we never discharged or laid off any graduate whom we had hired from this Course. . . . We had more than a year's experience with each student before we hired him. . . . Graduates in company's employ make unusually rapid progress. . . . The close contact with the Institute is of great benefit to our staff. *The members of the Faculty report thus:* We enjoy teaching classes of these students. . . . They are more alive, take a more comprehensive view of a subject, and have a real earnestness of purpose. . . . The close contact with the co-operating companies keeps us informed on what is going on in industry.

And, lastly, one observation on our educational philosophy in the large: From the great importance of Institute research, one might conclude that research and the training of expert investigators are the primary purposes of the Institute. Not so. The chief value of research at the Institute is its educational value — the inspiration which it gives to thousands of undergraduates working side by side with talented scholars engaged in pushing out the boundaries of human knowledge. This is another fact that emphasizes the all-important problem of establishing more effective communication between the Institute and its Alumni. In this whole enterprise we need and seek the advice and assistance of every pile-driving son of the Institute.

## "THEM AS HAS, GITS"

(Continued from page 303)

speed, it has long been the custom to lead air to a radiator through a duct, which slows the air down. After passing through the radiator and having its temperature raised, the air can then be released at increased speed to the atmosphere. Hence the external ducted radiator often seen under a liquid-cooled engine nacelle. At present the thrust so obtained is sufficient to neutralize perhaps a large part of the drag created by radiator and duct, but whatever the gain, it is virtually pure profit.

Since a duct of the proper shape can be designed much more easily for the unit radiator of a liquid-cooled engine than for the numerous cylinders of one cooled by air, planes employing the former type of power plant have so far benefited most from the radiator propulsive effect. On the other hand, the efficiency of a radiator and nozzle when used as a heat engine in this manner should increase with the temperature of the radiator surfaces, and the fins of an air-cooled cylinder are much hotter than the tubes of a liquid-type radiator.

Prediction is that, as speeds increase, the thrust from the radiator may not only neutralize radiator drag but may, conceivably, contribute slightly to the forward movement of the plane. Novel as it may sound, the idea of a radiator pushing a plane is of a piece with the far more drastic but often heard proposal to drive airplanes entirely by jets, i.e., to make rocket ships out of them. Regrettably, the cloud of fantasy which surrounds this subject is apt to hide the facts that rockets of one sort or another are almost as old as gunpowder, that in tests during 1935, rockets weighing from sixty to eighty pounds reached speeds of 700 miles an hour and altitudes of 14,000 feet, and that a great deal of serious investigation has only emphasized the soundness of the principles involved.

Difficulties being encountered at today's speeds center mostly about the propeller and are already causing many aeronautical engineers to consider the use of jets as the main propulsive means. As long as the propeller surfaces, always moving much faster than the plane, can stay below the speed of sound, they are highly efficient,

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converting into thrust about 85 per cent of the power delivered by the motor. But propellers, sharply limited in diameter and in the number of blades they may have, are already beginning to have trouble absorbing the great amounts of power which present engines can produce. During take-off and — with fast pursuit ships — during flight, propeller tips are frequently traveling nearly as fast as sound. At that speed, moving objects build up a compression wave which creates a comparatively enormous increase in drag. If airplane speeds continue their penetration of the fourth hundred, these compression waves will creep farther down the propeller blades, causing such drastic decreases in efficiency that other propelling means will have to be considered.

Then Buck Rogers may very well turn out to have the right idea. But the as yet speculative rocket planes will differ sharply from present rockets in at least one respect: They will probably continue to use gasoline as a fuel, since this liquid has several times the energy per pound of any explosive and carries with it all the elements required for its disintegration. In order to release the energy contained in the hydrocarbon, however, three and a half pounds of oxygen per pound of gasoline are required. Rocketers now supply this oxygen in liquid form, a practice which is prohibitive from the standpoint of weight and safety unless they wish to adventure in regions beyond the earth's atmosphere. Prosaic aviators, swishing along at 500 miles an hour, apparently an attainable speed as far as present airplane shapes are concerned, will pick up and compress their oxygen as they go along. To do so will require equipment and power; consequently, results will fall considerably short of the dazzling horsepower-to-weight ratios obtainable from rocket motors employing liquid oxygen.

## DESTROYERS

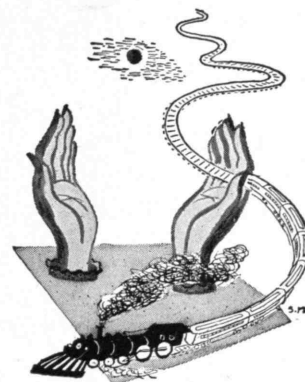
(Continued from page 301)

of a destroyer is estimated at three minutes. That's a total of six minutes. She will cost six million. That's a million a minute. Well, in his opinion, she is up to it — except for such and such particulars. These form the basis of the present argument, which goes on interminably, back and forth, while the destroyer roars over an azure sea, going all one way. She knows nothing of the arguments and nothing of her possible weaknesses.

The technicians are talking about balance, but they do not use the word in its easy and familiar meaning. Balance is a technical thing. The destroyer's wheels have so little whip to them that standing on the deck forward is like standing on a street corner. There's no vibration at all. A hen could lay an egg there, or at least wouldn't be afraid to try. This is mechanical balance.

Strange irony. We know, it seems, everything about balance in this unbalanced world. We know everything and understand nothing. Our tools are precision tools at the same time that our thinking, in all ways not strictly scientific, is not precision thinking. We are like a man who should make the discovery of the age — and then goes out and makes a fool of himself with a woman. Technically, we seem to be almost with the high gods. Emotionally, we are (Concluded on page 326)

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## DESTROYERS

(Concluded from page 325)

not much better than the Cro-Magnon cave man. The destroyer's performance can be predicted almost to a hair by the men who build her, but the performance of the ship of state is not so easily predictable. Our ship of state is more than one hundred and fifty years old and still must be rebuilt with almost every breath we draw. Rebuilt, too, almost at a venture, because its peculiar balances have been so little calculated.

Is that because any given man of us has so small a part of her for his charge? But the destroyer has got herself born by the labor of farm hands and clam diggers, simple men who know but a part of the deadly contrivance they have created. True, they know that part effectively. Their character has gone into her. Nevertheless their work, mysterious and godlike as it is, can be destroyed in a twinkling. The destroyer is a lethal force, but she is also a weakling. The fault of a seasick navigator can send her to the bottom. So can one five-inch shell in her gizzard. Perhaps our ship of state can learn something from destroyers.

## THE TABULAR VIEW

(Concluded from page 282)

ber. Now he brings a group of old-time craftsmen themselves (page 304) as they were depicted nearly six centuries ago.

**On 'Change.** — The M.I.T. has many good fortunes, none among which is of more lasting value than the fact that wherever and whenever Alumni and staff meet, whether two are lunching together or hundreds are assembled in some kind of conclave, discussion soon centers on the perennial topic of educational philosophy and its crystallization. In no small measure has the vitality of the Institute as a unique educational center been fostered and enhanced by this condition. That the uses of technological and scientific education are so direct and measurable is, perhaps, one main reason why such discussion flourishes year by year; professor and practitioner alike have a pragmatic as well as philosophical problem at heart. One phase thereof is ably considered in this issue of *The Review* (page 306 and 307) by EDWARD H. CAMERON, '13, a public utilities engineer whose career has included many other fields, and by WILLIAM H. TIMBIE, Professor of Electrical Engineering and Industrial Practice at Technology. Writing from the point of view of an engineer of broad and distinguished experience, Mr. Cameron stresses the need for practical grounding as well as theoretical training in the work of the engineering student. Commenting from the point of view of an educator of varied and notable record, Professor Timbie describes one highly effective means of meeting that need.

**Integument.** — To the Cover Club comes CARL A. SEGERSTROM, JR., '39, with a photograph of apt title — "And 'Y' Comes after 'G'" — plus fit nostalgic atmosphere.

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★ When you receive your final notice and application this month, please return it promptly. Last year both the luncheon and the banquet drew unexpectedly large attendance, and this year the committee wishes, by adequate advance information, to be prepared for all who can “come back to Tech” for Alumni Day.

The cost of a **TICKET** for all the **OFFICIAL EVENTS** of **ALUMNI DAY** will be only **\$5.00**

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# NEWS FROM THE CLUBS AND CLASSES

## CLUB NOTES

### *M.I.T. Club of Akron*

The March meeting of the Club was held on the seventeenth at the University Club. Twenty-five were present for the dinner preceding the talk. The speaker of the evening was Paul E. Belcher, secretary of the First-Central Trust Company of Akron, and the subject was "Defense Housing in Akron." It was an interesting talk on the housing problems caused in this area by the temporary emergency of increased production necessary for national defense. It was stated that delay in providing homes for workers will result in delay in manufacturing materials needed for national defense. Considering the importance of this vital subject, a larger turnout was expected. The talk, however, interested several guests of members and a reporter of the local newspaper, and the proceedings of the meeting were summarized in the paper on the following evening.

A number of last year's graduates have secured employment in local industries. They have shown considerable interest in attending the monthly meetings of our Club. These include Donald R. Harper and Leslie G. Higgins, with the Good-year Aircraft Corporation, and Clare Milton, with the B. F. Goodrich Company. — JAMES E. CONNOR '23, *Secretary*, 1746 13th Street, Cuyahoga Falls, Ohio.

### *Technology Club of Albany*

Frank P. Johnston, associate supervisor of industrial education of the New York State department of education, gave an address on "The Demand and Supply of Defense Labor and the Training Being Given to Supply and Demand" at a dinner meeting of the Club held on March 24 in Albany. Paul N. Hillard '22 presided.

During his address Mr. Johnston explained what the New York State education department is doing in the development of trade schools to train high-school boys in welding, riveting, and other processes used in the defense industry. He also told of refresher and promotion courses being conducted so that those already in industrial work may prepare themselves for stepping up to higher and better positions. — CARL H. ANDERSON '27, *Secretary*, New York Telephone Company, 158 State Street, Albany, N.Y.

### *Technology Club of Central Pennsylvania*

The first meeting of the year was held at the University Club in Harrisburg on February 28. Those who attended from the outlying districts, including York, Lebanon, and Lancaster, were fortunate

to weather a snowstorm of no mean proportions. Our President, Louis S. Morse '96, was less fortunate. During the dinner we received his regrets by wire, saying that he was snowbound in Reading. In his absence, Percy Tillson '06, Honorary Secretary of the Harrisburg district, presided.

The speaker of the evening was John E. Burchard '23, director of the Albert Farwell Bemis Foundation at the Institute. The subject, "Application of Science in Architecture," was interestingly covered and illustrated by lantern slides. In addition to pointing out the type of research being carried on by the Bemis Foundation, particularly in the fields of prefabrication and the use of housing materials, Professor Burchard outlined the various fields of defense work in which many of the staff at Technology are engaged. Those attending were pleased to learn that the staff and the equipment facilities at Technology are helping to further national defense. — It was indeed an honor to have Professor Burchard address our Club and to have enjoyed the evening with him. Our heartfelt thanks were expressed, especially since he had to change his usual itinerary, between Washington and Boston, during these busy times.

The following who attended had the usual pleasant experience of comparing notes since our last get-together: Edgar A. Weimer '98, Harry W. Goldthwaite '99, Percy E. Tillson '06, George E. Hodges '13, Clifford J. Walton '14, Gardiner C. Wilson '15, Eldor J. Mink '22, Breese J. Stevens '23, Tien P. Kuo '24, Francis A. J. Brown '26, John P. Connelly '28, William P. Lord '30, James H. Toas '30, Peter P. Chunko '37, and Clark H. Hamilton '37. — GARDINER C. WILSON '15, *Secretary*, Armstrong Cork Company, Engineering Department, Lancaster, Pa.

### *Technology Club of Hartford*

Thomas B. Rhines '32, a project engineer at Hamilton Standard Propellers, resigned from the secretaryship of the Club because of business pressure, whereupon Ermano Garaventa '35, a project engineer of the same company, carried on as substitute until the undersigned was asked to take over, assuming that he did not have much to do but cut out paper dolls.

The Club started the season on June 29 with its annual outing at Boxwood Manor, Old Lyme, on Long Island Sound, with guests from New Haven, Bridgeport, Waterbury, and Providence. The events included baseball and swimming in the morning, with a chicken or lobster dinner served at 2:30 P.M. After dinner, the guests separated into groups to take part in archery, tennis, and golf. The attendance totaled thirty-nine members, including O. B. Denison '11, of Worcester,

who never fails to be with us on that day. Charles L. Pool '21 came from Providence with Mrs. Pool. The tennis match was won by New Haven. Edwin C. Alden '95, relinquished his duties as head of the tennis committee, for the first time, in favor of Alexander J. Minkus '33. The reason given was rather evasive, so it was natural for the members to assume he was letting himself down gently when they saw that he played softball. Everett O. Hiller '04 headed the golf committee. George L. Mylchreest '10 led the merry-making and singing. J. Henry L. Giles '29, President of the Club, presided, with Percy E. Harvey '28, President of the New Haven Club, also adding a few words. Stanley H. Osborn '15, state commissioner of health, appeared in the pink of condition by creditably playing baseball and golf. Hudson B. Hastings '07, professor of economics at Yale University, played a good game of golf and landed in the prize money. Frederick O. A. Almquist '23 was in charge of baseball, and Earl C. Wheeler '26 was in charge of the dinner. The baseball game was won by the Hartford Club.

The first fall meeting was held on October 23. We were guests of the Technology Club of the Connecticut Valley in Springfield, Mass. President Compton spoke on M.I.T. and national defense. About forty members from our Club attended. Seated at the head table with Dr. Compton were Charles E. Locke '96, Alumni Secretary; Leonard J. Brooks '23, President of the Springfield Club; J. Henry L. Giles '29, President of the Hartford Club; Roger L. Putnam '17, Mayor of Springfield; John G. Wheale '38, Secretary of the Springfield Club; and Andrew S. LaPenta '22, Secretary of the Hartford Club; George L. Mylchreest led the group with a few Technology songs and cheers. For full details of Dr. Compton's talk see page iv of the December issue of *The Review*.

Our next meeting was held on December 5 at the City Club of Hartford. Forty members listened to Robert J. Ross '06, chief engineer of Hartford, lecture on the \$20,000,000 program for improvements within the city and its environs, such as dike protection for the lowlands (the Connecticut River rose from a mean level of 16 feet to 36 feet in 1938), express highways (to relieve congestion caused by through traffic) and their relation to the new suspension bridge which is being erected by the state across the Connecticut River about a mile below the present bridge connecting Hartford with East Hartford.

A joint meeting of the Technology Clubs of Hartford and Springfield was held on February 13 at the University Club in Hartford. About fifty members listened to Eugene Rabinowitch, a research associate in the Department of Chemistry at M.I.T., give a very interest-

ing talk on solar energy, touching on the ways and means of harnessing this energy to man's need, particularly as a form of stored energy. He described the Technology laboratory that is heated by the energy of the sun. The building is so placed that it catches the maximum amount of energy, which is absorbed by a stream of water flowing over a screen. The water then goes to a central tank, where it is caused to give up its energy in the form of heat. Naturally, the system does not work when the sun is not shining. The amount of energy available from the sun at 100 per cent absorption is  $1\frac{1}{2}$  horsepower per square meter and  $10^{14}$  horsepower for the entire world. Dr. Rabinowitch demonstrated the result of an electrical impulse generated by the light of a 100-watt lamp acting on a cell filled with a chemical solution.

The Hartford Club welcomes John A. Swift '27, who recently moved to Hartford from Worcester, Mass., where, according to O. B. Denison '11, he was secretary and former president of the Worcester County Alumni Association of M.I.T. He is now connected with the Billings and Spencer Company, drop-forging manufacturers, in Hartford.

We have unofficial information that one of the Club's staunchest supporters, Edwin C. Alden '95, is laying undercover plans for a trailer tour de luxe to all parts of the western hemisphere. The Club wishes him the best of luck and warns him not to fail to take extensive notes and movies for a future interesting lecture. — ANDREW S. LAPENTA '22, *Secretary*, 20 Rosedale Road, West Hartford, Conn.

### *M.I.T. Club of Northern New Jersey*

Thanks to Sumner Hayward '21 we have an account of the regional meeting of the Club held on Thursday night, March 20, at Paddy Burke's Inn in Hohokus. Honor guests were C. George Dandrow '22, President of the Technology Club of New York; Alfred T. Glassett '20, former New York Club President; William H. Correale '24; Richard L. Lassiter '24; Carole A. Clarke '21; and Miles Pennybacker '23, President of the Club.

Arnold Roman '29 acted as toastmaster. Four reels of motion pictures, two in color showing current activities at M.I.T. and two depicting army air defense and attack training, were features of the after-dinner program. The two reels of M.I.T. movies were sent by Charles E. Locke '96 and evoked the comment, "When do they do any studying these days?" Al Glassett played the piano for us while we went through the repertoire and ended with the "Stein Song."

Present besides those named were: Philip A. Potter '01, Percy G. Hill '05 and his son Lyman P. Hill '36, Harry F. Richardson '08, Theodore Z. Haviland '17, Kenneth M. Lane '17, Roy C. Sylvander '17, William D. Neuberger '18, Franklin H. Wells '18, Herman A. Herzog '19, Donald L. Dowling '20, Malcolm B. Lees '20, Maxwell K. Burkett '21, George

A. Chutter '21, Eugene P. Rowell '22, Godfrey B. Speir '22, Anatole R. Gruehr '24, Charles P. McHugh '26, Lucas E. Bannon '27, Norman D. Fitz Gerald '31, Jack I. Hamilton '36, Winthrop G. Scott '36, Leo Avondoglio '37, David A. Richardson '37, Henry J. Sieradzki '38, and Albert W. Beucker '40.

Roman, Hayward, Gruehr, and Speir constituted the committee for the dinner. — AUGUST P. MUNNING '22, *Secretary*, Munning and Munning, Inc., 202 Emmett Street, Newark, N.J. FREEMAN B. HUDSON, JR., '34, *Assistant Secretary*, Colgate-Palmolive-Peet Company, 105 Hudson Street, Jersey City, N.J. NEWTON S. FOSTER '28, *Assistant Secretary*, 73 Daniel Avenue, Rutherford, N.J.

### *Intermountain Technology Club*

The Club met on February 20 at the University Club in Salt Lake City for dinner followed by a talk by H. T. Plumb, consulting engineer for the General Electric Company. Dr. Plumb discussed and explained recent advances made possible in many fields by research conducted in the laboratories of the major electric companies. A general discussion following Dr. Plumb's formal remarks provided many of us with an engineer's, rather than a salesman's, evaluation of present-day household, office, and plant electrical apparatus.

Those attending were: Bayard W. Mendenhall '02, Eugene W. Sloan '20, George A. Browning '23, Edward M. Tittmann '29, Marvin P. Egleston '31, John B. Tucker '31, G. B. Hulett '34, Frank R. Milliken, Jr., '34, David J. Buckwalter '35, Douglas A. Elkins '36, and Robert Macdonald '40.

We record new addresses for club members: Lieutenant Colonel Howard F. Clark '12, Fort Belvoir, Va.; Ralph M. Emerson '14, 1352 East South Temple, Salt Lake City, Utah; and Harold B. Roberts '30, College of Idaho, Caldwell, Idaho. — Ernest F. Ayres '98 died in December. — FRANK R. MILLIKEN, JR., '34, *Secretary*, 8642 West 2800 South, Magna, Utah.

### *Washington Society of the M.I.T.*

A meeting of the Society was held on Friday, February 21, at 5 P.M. at the Y.W.C.A. Our guest speaker, Leon Dostert of the department of languages at Georgetown University and formerly of the French embassy, discussed "France — Yesterday, Today, and Tomorrow" so ably and in such an interesting manner that the meeting was easily one of our best. Born in Longwy after it had been occupied by the Germans for four years, Dr. Dostert first heard the French national anthem played by an American band. He emphasized the necessity and desirability of preserving the close and friendly relations that have existed between our republics.

He listed the many attempts France had made to assure security since the World War, starting from a defensive alliance,

then, successively, independent action by occupation of the Ruhr, the *Cordon Sanitaire* or Little Entente, collective security, and, finally, appeasement, called *rapprochement* in those days. This appeasement occurred four years before Hitler's regime and was demonstrated by the withdrawal of troops from the Rhineland six years before treaty requirements. Cultural exchange of students was another aspect of the same appeasement. Dr. Dostert insisted that the German attitude antedated Hitler, describing how Stresemann, when the French were trying their best to work with him, recorded in his diary that he was "pulling a finesse on the French." Following all these measures, the French established the Maginot Line, a symbol of defense. All of this work represented a succession of groping failures; arming for offense never entered the French mind, and France trusted promises too much.

Dr. Dostert listed the specific promises by Hitler, in respect to the various countries now overrun, and the date at which Hitler violated each promise. He listed *der Führer's* demands at first as freedom from the "shackles of Versailles," later "*Lebensraum*," and then "the new order in Europe." "What next?" is Dr. Dostert's question. Some people still believe and trust, in spite of all broken promises. Dr. Dostert condemns strongly the obstructionist minority as being largely responsible for the overrunning of France, particularly since it had not recovered from the World War and was still in an anemic condition.

Harold H. Burton, son of our beloved Dean Burton and a senator from Ohio and former mayor of Cleveland, came in with Proctor L. Dougherty '97. Burton expressed his interest in Technology and the hope that he would be able to attend some of our meetings. Another distinguished guest was Paul Weeks Litchfield '96, President of the Goodyear Tire and Rubber Company, who was in town in connection with an exhibit by his firm for defense officials.

Proctor Dougherty said a few words in memory of Harry W. Tyler '84, former President of the Washington Society, as February 3 was the third anniversary of his death. Proctor's reminders of some of Dr. Tyler's mannerisms, his sharp, keen eye, and his witty remarks, caught by only the most alert of us, were really appreciated. We stood in silence in respect to the memory of our beloved former President.

The following additional M.I.T. men and guests enjoyed the excellent dinner and speeches: George W. Stone '89, John G. Crane '90, William B. Poland '90, Harry G. Hamlet '96, Stanley C. Sears '01, Merton L. Emerson '04, Amasa M. Holcombe '04, Frank W. Milliken '04, Reginald A. Wentworth '04, George N. Wheat '04, Louis H. Tripp '06, Rudolf H. Kudlich '07, Edward D. Merrill '09, Kenneth P. Armstrong '10, Carl G. Richmond '11, Alfred E. Hanson '14, Aubrey D. Beidelman '15, William G. Brown '16, Horace M. Baxter '17, Louis J. Grayson '19, Lawrence W. Conant '21, Kenneth Bernard '22,



William K. MacMahon '22, Charles Thomas-Stahle '22, William V. Cash '24, George D. Fife '24, Christos Harmantas '25 and Mrs. Harmantas, Henry C. Hoar '25, Donald F. Horton '27, Robert M. Tucker '27, Walter G. Hodder '28, M. Waldo Keyes '28, S. Lindsay Lord '28, James A. McCarthy '28, George D. Mock '28, Raymond W. Jones '29, Nicholas P. Stathis '29 and Mrs. Stathis, Albert F. Bird '30, Mario V. Caputo '31, Freeman G. Corkum '31, Henry D. Randall, Jr., '31, Frederick M. Moss '32, John A. Robertson '32, Roger J. Zampell '32, Roger E. Needham '35, Blake M. Loring '37, Frank W. Brown, 3d, '38, Ira H. Lohman, Jr., '38, Henry C. Meadow '39, K. L. Calhoun, Louis A. Carapella, and G. W. Parker. — OLIVER G. GREEN '30, *Secretary*, 11408 Georgia Avenue Extended, Silver Spring, Md. WILLIAM K. MACMAHON '22, *Review Secretary*, Rosslyn Gas Company, 3240 Wilson Boulevard, Arlington, Va.

## CLASS NOTES

### 1870

William C. Dickinson, whose address is 5929 Cates Avenue, St. Louis, Mo., has written a letter to Alumni headquarters accompanied by two of his little pamphlets, copies of which he very kindly offers to send without charge to anyone applying to him for them. These pamphlets are brief and easy to read, and the thoughts in them are inspiring and particularly applicable in these troublous days, when all are seeking sane points of view and good health.

The text of his letter reads: "The enclosed booklets are *free* and *postage paid* for as many as you can use to advantage. The Technology Christian Association has them. There are now 27,000 in all parts of the world, and they might be called a hobby for a man nearly ninety-two years of age. The larger one is a philosophy of life, and the other is a manual for good health. I receive many kind letters from those who say I have helped them to meet the problems of life that come to all of us. I send the pamphlets on request."

### 1877

Joseph Phelps Gray, President Emeritus of the Boston Manufacturers Fire Insurance Company, 185 Franklin Street, died on February 21 at his home, 103 Prince Street, West Newton, Mass. He was born in Lowell, Mass., on August 6, 1851. From 1877 to 1880 he did general engineering in Massachusetts. In 1880 he was engaged in general engineering at Lake Providence, La., in connection with improvements on the Mississippi River. In 1881 he was assistant engineer with the Essex Company, Lawrence, Mass.; from 1881 to 1891, assistant engineer with the proprietor of locks and canals on the Merrimack River, Lowell, Mass., engaged in general hydraulic engineering and mill work; from 1891 to 1905, assistant to the president and vice-president of the Boston Manufacturers Fire

Insurance Company. In 1900 he succeeded Edward Atkinson as president of the company and served until 1929, when he was retired.

On October 28, 1881, he married Annie H. Tyny of Lowell, Mass. They had two children: Mabel, born in 1883, and Richard, born in 1887. Richard died in 1906. Joseph is survived by his daughter, Mrs. Herbert M. Andrews of West Newton, and three grandchildren.

Gray was an alumni member of the Corporation of the Institute. He was also a member of the University Club, Boston, the Technology Club of New York, and the Brae Burn Country Club. He was a charter member of the West Newton Club, Newtonville, and also held membership in the Neighborhood Club of West Newton, the Chamber of Commerce, Boston, and the Boston Society of Civil Engineers. He was active in political affairs but never held a political office. For recreation he played golf in the summer and fall and curled and bowled in the winter. He also played whist when opportunity offered.

Gray was always at our reunions. At one time he fell and broke his hip, but he recovered after an operation, so that he could walk with the aid of a cane and an assistant. At the reunion in 1935 he gave this very interesting account of the organizing of the Class: "Without any question '77 was the first Class to form a regular organization. This occurred in either December, 1874, or January, 1875. In December, 1874, Caleb Cushing, grandson of one of our most able statesmen and one of the most popular men of the Class, was killed in the gymnasium while performing the giant swing on the horizontal bar. Upon his death our Class held a meeting, and a committee was appointed to attend his funeral. The meeting was adjourned until the return of the committee, when a complete organization of the Class was formed with John Hardman as president, Hale as secretary, and myself as treasurer. Later at my request the treasurership was combined with the position of secretary."

"In 1876 at a meeting of the Class a committee was appointed to take up with the other classes the subject of selection of the Technology colors. At the suggestion of our committee, cardinal red and silver gray were chosen and were worn on the hatbands of the students when they attended the centennial celebration at Philadelphia. I think you will find a record of the colors incorporated in Hale's class book of 1910."

After the death of Plimpton, I wrote to Gray for information. I quote from his letter: "Immediately on being graduated I was off on a position to survey the big Tufts estate in South Weymouth and neighboring towns. Plimpton and Kittredge assisted me on this job. When we finished, Kittredge went west and I went south. As I have always been a poor correspondent, I lost all connection with Plimpton, though I saw him a few times at our reunions. I am of the impression that Plimpton had few intimate friends because of his reserved nature."

At the house where they boarded when they were surveying the Tufts estate, there was a young lady named Miss Fiske. She had been living in West Roxbury for several years when she learned that one of her neighbors was one of the surveyors she had known at Weymouth back in '77. She got in touch with him, and after our reunion in 1935 the three Weymouth surveyors met their early acquaintance and recalled some of the events of that time. One of the most amusing of these concerned the missing hat. About ready to start off for the day's work, Plimpton could not find his hat anywhere. The minister who boarded there was seated on the sofa. Miss Fiske said to him, "You don't suppose you are seated on it, do you?" He said, "I do not know," but jumped up, and there it was. Plimpton got his hat and off he started.

As Kittredge was the only living member of the Class intimate with Gray, a letter to him brought the following answer: "I heard of Gray's death through a friend who lives in Lexington, a Mrs. Pratt. She was a Miss Fiske in 1877 when we were graduated, and she taught school at Weymouth, Mass. . . ." Kittredge went on to tell about meeting Miss Fiske at the boardinghouse. "The acquaintance then made lasted throughout the years, though I have seen but little of her. One of the last calls that Gray ever made was upon Mrs. Pratt in Lexington. Mrs. Pratt wrote me that he stayed only a short time and seemed quite feeble. You may remember that when I left our class reunion last June I said to you, 'I very much fear that Joe Gray will not be present at our next reunion,' — just as I had said the same thing of Plimpton the year before."

"I have heard in years gone by of Joe's ability and outstanding integrity in his business connections. . . . I had friends among large manufacturers who had met and dealt with Joe, and they spoke highly of him as a man and as an engineer."

"Joe was always strong in maintaining that '77 was the originator of Tech's colors. Some earlier Class — perhaps '73 or '76 — had suggested something like the colors finally adopted, but it was brought out that some female college or other institution of learning had practically the same. Hence '77 modified the colors so as to avoid any interference, and today those colors are in evidence wherever Tech men appear. Gray also was a staunch objector to any alliance with Harvard when the merger of the two institutions was discussed. There was never any doubt as to where Joe stood on any question; he not only had strong opinions but he had the courage of his convictions and did not hesitate to make them known."

"He was surely loyal to '77. I doubt if anyone else of the Class, handicapped as he was and requiring the aid of his chauffeur and nurse, would have come to our meetings as he did in 1939 and 1940. He will be missed very much at our future gatherings. I got out our class luncheon photographs after his death, and I was

1877 Continued

surprised to see how much he had failed from 1939 to 1940. . . .

"As for our next reunion — any date near June 9 will suit me as far as I know now, and you can count upon my being present unless something drastic keeps me away. I shall try to get Hallett to be present also. I have seen him, had a fine talk with him, and have invited him to dine with me here in Yonkers, but he has not yet come. Once when the day was set, his son was ill; and the next time, my cook took French leave and so I had to call it off.

"Hallett is rosy cheeked and ruddy looking — because, he says, of living in the saddle for twenty years on the Wyoming frontier. His eyesight is not so good as it might be, so I was able to spot him in a crowd and call him by name before he saw or recognized me. His voice indicates that he is no longer young, but otherwise he seemed very well and interested in Technology and class matters. I tried to get him to go to the annual dinner of the Technology Club of New York, but he said that attendance would mean too late hours for him because he would have to travel back to Brooklyn. Hence I was the only representative of '77, and I was the oldest alumnus present. As such I had a seat at the 'distinctive' table — there being no 'head' table — at which the guests of honor, Dr. and Mrs. Compton, were seated. When a special dance was announced for the oldest Alumni present, I showed them that '77 could circle the hall a couple of times to the music of the 'Blue Danube.' I got a hearty cheer from the assembled multitude — about 250 — when I stepped out onto the floor with the pretty and graceful young woman who was acting as dance leader of the evening. The male dance leader took a very fine looking matron from '88 as his partner as the oldest co-ed present.

"I don't know if we can get Hibbard to come in June. He evidently does not like to leave his wife. — I went to California to spend Thanksgiving with my daughter, getting back about December 1. Then, so as not to play favorites, I went to Florida to spend Christmas with my son and his family. He is at Rainbow Springs, near Dunnellon, Fla. I had to get back for a January 3 appointment in Yonkers, hence did not stay there as long as I did in California.

"Now that Gray is gone, you step up to the position of dean of our Class, and as such I salute you. You are truly an energetic and active dean and an outstanding Secretary who takes such vital interest in our class members and their doings. . . ."

Our Class now numbers seventeen whose addresses are known. There are six whose addresses are unknown. — BELVIN T. WILLISTON, *Secretary*, 3 Monmouth Street, Somerville, Mass.

## 1883

Winthrop Alexander, who was prominent in class affairs during our first two years, died on February 7 at his home on 97 Broad Street in Weymouth, Mass. He was the captain of one company of our

battalion during our second year at Technology and later became acting major. Your Secretary, then a first lieutenant, became acting captain. We were closely associated, therefore, during those years, and as Secretary I have always endeavored, though unsuccessfully, to get him to come to class reunions. He had much trouble with his eyes during the last years.

The following was published in the *Boston Herald*: "Col. Winthrop Alexander, 79, retired architect, died . . . after a three-week illness. . . . A native of Boston, . . . he had been a member of the national guard in Rhode Island, in the District of Columbia, and in Massachusetts, rising through the ranks from private to colonel. In pursuance of his profession, he had resided successively in Washington, Baltimore, Montreal and New Brunswick, N.J.

"He was a member of the Society of Colonial Wars, Sons of the American Revolution, New England Historical Genealogical Society, Roxbury Historical Society, National Genealogical Society, Sigma Phi fraternity, and Algonquin lodge of Masons. He leaves his widow, the former Harriet Briggs; two sons, Charles W. of Quincy, and Donald B. of Omaha, Neb.; and two daughters, Mrs. Arthur W. Snow of Malden, and Mrs. Norman G. Cortelyou of Plainfield, N.J."

Writing to Edward Stevens, who sent the clipping to me, I said: "Wint Alexander was not graduated, although he was an exceptionally able and hard worker. He left Technology to provide for his father and mother, and he had a difficult time of it for some years. I always liked and admired him." — HARVEY S. CHASE, *Secretary*, 431 Chase Avenue, Winter Park, Fla.

## 1885

That misfortunes never come singly would seem to be proved by the fact that '85 has lost three members recently. On January 31, Henry Jules Williams died at his daughter's residence in Cambridge, Mass. He had received his A.B. from Harvard before he came to Technology in 1884 to specialize in chemistry. He had not attended any class meetings for several years and did not respond to my request for personal data, so unfortunately I can give little information about him.

Allyne Litchfield Merrill died in Portland, Maine, on February 26. He was born on August 8, 1864, in Malden, Mass., but his family moved to Cambridge when he was very young. He attended the Cambridge public schools and entered Technology in September, 1881. He was graduated with an S.B. in Course II and began teaching at Technology that fall, later becoming a professor in mechanical engineering and secretary of the Faculty. He retired in June, 1935. So long a service indicates that he was an able professor. Allyne became Secretary and Treasurer of our Class in 1886 and continued in those positions till 1898. Prior to his retirement he frequently attended class reunions, but he did so rarely during

later years. He was well liked by all his classmates. He died from a complication of diseases following influenza, but he was in full possession of his faculties up to the last few hours of his life.

On March 6, Parker Cogswell Choate died in Essex, Mass., where he had lived for several years. He was born in Salem, Mass., on June 5, 1862. He came to Technology in 1881 from the School of Mechanic Arts. In the fall of 1882 he went to Lynch Creek, Ariz., a typical frontier town, and was employed by the Howell Smelting and Mining Company. Later, as a metallurgical engineer, he lived in various places in the West. Returning east in 1890 he became a pioneer in zinc electrolysis and mixed-ore sublimation. In 1929 he developed an interest in research in building-plaster manufacture and schooled himself in chemical patent prosecution.

Choate was an enthusiastic member of the Class and whenever possible attended class meetings. We were sorry that ill health prevented his attending our fifty-fifth reunion in June, 1940. He wielded a facile pen and was rather fond of writing. He compiled that full report about our fiftieth anniversary at Wellfleet in 1935, but modestly requested that his name not be mentioned.

Our contacts with other classmates are so few that we know rather little about each other. You may like to know that Choate followed up a previous conversation by writing me a long letter on religion. — ARTHUR K. HUNT, *Secretary*, 145 Longwood Avenue, Brookline, Mass.

## 1887

A recent communication from Wilcox registers disappointment at the lack of '87 news in the latest Reviews. He assumes that the difficulty is that the fellows do not send in any. This is just the trouble; the Secretary has heard from but two or three men since the turn of the year, and each insisted that he had no class news to offer. Although a most interesting travel writer, Wilcox has not ventured abroad lately, so he assures us, and consequently he has nothing to offer. A brief letter from Gelett Burgess states that he is feeling well except for a slight attack of arthritis from which he is slowly recovering. He was contemplating a trip to California for a few months for both business and recreation.

Your Secretary was delighted to receive a surprise call on the afternoon of March 17 from our old colleague, Squash Cushing, who made it a point, on his return trip from Cape Ann, to stop in Salem expressly to cheer up the downhearted pen-pusher of the Class. Though all too short, the time was passed most pleasantly, and, since it was Evacuation Day, a fitting tribute to the memory of our Revolutionary ancestors was offered.

Carter writes that, though not essaying a foreign cruise as usual, he and Mrs. Carter have spent several weeks in New York and Atlantic City recently to the evident enjoyment of both. — Lonsdale Green has had the misfortune to be laid up for a few weeks with a broken toe but



1887 Continued

is now able to get around with a cane, a limp, and also the aid of a taxi, when venturing very far from home.

Our classmate George L. Norris, chief metallurgical engineer of the Vanadium Corporation of America, was honored by a luncheon given by the officers and department heads as a tribute to his long years of outstanding service. The occasion was the thirty-second anniversary of his association with the corporation and its predecessor, the American Vanadium Company, and the following day was the seventy-fifth anniversary of his birth. Following graduation, Norris worked for several different companies before he joined the staff of the Standard Steel Works at Burnham, Pa., as engineer of tests.

Shortly after the organization of the American Vanadium Company, he left Standard Steel to follow the work begun by Kent Smith in development and promotion of vanadium steels. He has been with the Vanadium Corporation of America continuously since that time, except for a period during the World War when he was chief metallurgist for the Bureau of Aircraft Production and manager of the bureau's Pittsburgh office.

From his Duxbury home Frank Brett recently sent his regards to the Secretary and fellow members of the Class. Frank is still enthusiastic about life in the open and thoroughly enjoys the winter season regardless of wind or weather.

A long-deferred obituary of our esteemed classmate and Treasurer, Benjamin C. Lane, who passed away suddenly on Thanksgiving, is given herewith in an article from the *Boston Traveler*: "Benjamin Clarke Lane, 74, vice-president and general manager of the Allen-Lane Company of Boston, died suddenly of a heart attack . . . shortly after eating his Thanksgiving dinner. He lived at 48 Maxwell Street, West Roxbury. A former member of the Boston common council in 1895 and 1896, and later serving in the House of Representatives, he had been a president of the West Roxbury Citizens' Association and the United Improvement Association. He was a director of the Boston Children's Friend Society, a member of the University Club, Boston City Club, and was active for many years at the Union Congregational Church of Boston.

"Born in Boston, the son of Jonathan Abbot Lane and Sarah Delia Clarke, he was educated at Boston High School and Massachusetts Institute of Technology. After being associated with several woolen goods concerns he became vice-president and manager of the present Allen-Lane Company of Boston. He leaves a widow, the former Florence Goodwin of Boston, whom he married in 1899; a daughter, Mrs. Robert H. Anderson; a grandson, Donald Lane Anderson, and a brother, Alfred C. Lane."

The Secretary is also in receipt of the sad news of the passing of another classmate, Harry F. Totman. A clipping from a *Denver, Colo.*, paper announced his death on Christmas: "Harry Forsythe Totman, 74, of 1470 Cook street, a retired

druggist, died . . . of a heart ailment after several weeks of illness. Mr. Totman was born in Fairfield, Maine. After preliminary schooling in the Fairfield schools, he entered Phillips-Exeter Academy and upon graduation entered the Massachusetts Institute of Technology. Mr. Totman was graduated from the Institute as a civil engineer in 1887. In 1888 he entered the drug business in Duluth, Minn. Mr. Totman came to Denver in 1896 and entered the drug business there. He operated several stores in Denver prior to his retirement in 1936.

"On July 23, 1900, he and Ann Palmer Billings were married in Denver. Mr. Totman was a prominent member of the Duluth Ionic Masonic lodge. He was a charter member of the Duluth Ionic lodge which he helped to establish in 1889. He was also a member of El Jebel Temple here. He is survived by his widow and two brothers, E. P. Totman, of South Orange, N.J., and Fred Totman, of Beverly Hills, Calif."

It is a matter of regret that up to the present writing the Secretary has been unable to get any data on the careers of Leandro T. Safford and William B. Douglas. We hope that a more complete record of Solomon Sturges than is now at hand can be secured for the next number of *The Review*. It might not be out of place at this time to remind members of the Class that the Secretary depends entirely upon them to furnish news for the class notes in *The Review*. There has been an unusual dearth of this news of late. Just bear that in mind, please, and see if we cannot hit the pace once more. — NATHANIEL T. VERY, *Secretary*, 15 Dearborn Street, Salem, Mass.

## 1888

The funeral service for Charles A. Stone was held on February 27 at St. James Episcopal Church, Madison Avenue and 71st Street, New York City. The church was filled with a very distinguished gathering of friends and business associates. Flowers of wonderful coloring not only filled the chancel but overflowed down the entire length of the church on both sides.

The service was very impressive, with singing by the vested choir of sixty boys. Those present from the Class were President and Mrs. Webster, who flew from Boca Raton, Fla., Frank Moore from Huntington, Long Island, Herbert Bird from Brooklyn, and the Secretary from Princeton, N.J. Other Technology men present were Henry G. Bradlee '91, Charles F. Wallace '92, Gerard Swope '95, John R. Macomber '97, Charles W. Kellogg '02, and many others. Among the honorary pallbearers were Karl T. Compton, Gerard Swope, W. Cameron Forbes, Henry Hornblower, George O. Muhlfeld, Edward R. Stettinius, Jr., Eliot Wadsworth, Albert H. Wiggin, and Owen D. Young.

The Secretary has received from Whitney Stone, on behalf of the members of the family, a note of appreciation for the flowers which the Class sent to his father's funeral.

## THE TECHNOLOGY REVIEW

Edwin S. Webster was elected chairman of the board of Stone and Webster, Inc., to succeed Charles A. Stone. The office of vice-chairman, formerly held by Webster, was eliminated. — The *Boston Herald* of March 16 ran the following: "Brilliant tulips, pink crab trees and apple trees in full bloom, primroses, tiny white grape hyacinths and various flowering shrubs were used in the prize winning garden of President Webster of the Massachusetts Horticultural Society in their Spring Flower Show." Webster also won prizes for "group of orchids, gloriosa superba and irises." Mr. and Mrs. Webster visited their eldest daughter and her children in Vancouver early in April.

Nickerson of Beachwood, N.J., my nearest class neighbor, fifty miles from Princeton, is with the New Jersey Geodetic Control Survey and says that Ralph Doane, his cousin, is still raising dogs in Harwichport, Mass.

The Secretary was present on March 18 in Princeton Cemetery when a floral wreath from President Roosevelt was laid on the grave of Grover Cleveland in commemoration of the 104th anniversary of the former president's birth.

The Secretary went to Chebeague Island, Maine, on April 28 for his summer vacation of six months till October 15. — BERTRAND R. T. COLLINS, *Secretary*, Chebeague Island, Maine. SANFORD E. THOMPSON, *Assistant Secretary*, Thompson and Lichtner Company, Inc., 620 Newbury Street, Boston, Mass.

## 1889

Acting on the now accepted theory of the "indispensable man," the Secretary, utilizing powers with which he has never been invested, appointed a nominating committee consisting of Edward V. French, chairman, William W. Lewis, and Jasper Whiting to nominate a candidate for Class President to succeed to the office left vacant by the decease of our beloved President, Hollis French. This committee has conferred and after a spirited discussion has unanimously reported Frank Hobbs as candidate at the next election, whenever that may be. Frank has accepted, and sometime or other, maybe next June, he will stand for election, meantime acting as if he really had been elected by popular vote. This peaceful affair illustrates the beauties of a mixture of democratic and totalitarian ideologies, if you get what the Secretary means. — WALTER H. KILHAM, *Secretary*, 126 Newbury Street, Boston, Mass.

## 1891

By the time you read this, our fiftieth reunion will be a month or less away, and we will have heard from most of our Classmates. Several general letters from our Secretary and from Chairman Young will have reached you. Even at this writing, late in March, judging by replies already received, we confidently expect at least fifty members of the Class to attend some, if not all, of our festivities. Our complete program will have reached you by now. You will note the provisions for the ladies.

1891 Continued

The program will include a buffet luncheon at the Algonquin Club on Friday; then we go to the New Ocean House, Swampscott, where we will stay until Sunday. At the Alumni Day luncheon on Monday, '91 men and their wives will have a special table with Dr. and Mrs. Compton, and at the exercises in the afternoon one of the chief speakers will be a member of our Class. We expect to be well represented at the Alumni Banquet on Monday evening. On Tuesday we will attend the Commencement Day exercises and have reserved seats on the platform. If you cannot come to our golden anniversary, at least write us a letter, but *come if you possibly can.*

Several letters were received following our first announcement. Here are some excerpts. — From England, Robert Ball wrote to Gorham Dana last December: "As this will probably be too late to wish you a happy Christmas, will you take it as conveying the best wishes for the new year to you and Mrs. Dana? The times seem to be out of joint for wishing happiness in this distracted world, but we must carry on with good wishes, at least, as well as with all else. This is indeed a sad time for us, for my only son was killed in action in August. He was everything a son could be, and he was highly regarded in his job in the Colonial service and occupied a responsible position. He was destined right for the top and, though only thirty-one, he had already made his name, as abundant references in the press, as well as personal letters from the officials, testify. He did his bit, and did it nobly, in helping to beat Hitler.

"Of course I am barred from telling you much about the course of events here. But suffice it to say that we are in good heart and are grateful for all the help that your country affords us. Knowing as I do the crosscurrents of thought and affiliations in your country, I am immensely gratified by the turn of events.

"I have not heard anything from Technology for some time and wonder how the Class is faring. Just to think that our half century is due is a reminder of the passage of time. I suppose you are preparing to celebrate and hope you will have a good muster. I wish I might be with you, but of course it is impossible for more reasons than one. My thoughts will be with you in June.

"Though, like you, I have retired from official work, I am really in harness again chiefly because of the war, which has laid duties upon us all. It keeps me busy, and of this I am not sorry, for it prevents me from moping. Even if there were no war, I would find much to do, just as you do, on hobbies and distractions in which I am interested."

Margaret Maltby wrote from La Jolla, Calif.: "... Alas! It will be impossible for me to be present. I came out to San Francisco in very early November, expecting to make my home with a friend. No sooner did the rainy season begin, however, than in a few days I was in the grip of a very severe attack of arthritis, which has crippled me quite badly. I shall have to remain here this spring,

hoping the excellent care I have here and the delightful climate of La Jolla will work wonders. I shall later make my home in the East, probably near New York City. I sincerely hope the reunion will be a most happy and successful one. My best greetings to you on that occasion."

Charlie Garrison wrote from Santa Barbara, Calif.: "We have just moved from the apartment we had to a house about a mile north on much higher ground with a good view of the ocean. We are near several of our intimate friends.

"Bob gave us a new Oldsmobile for Christmas, and it is a very fine car. We have been so busy settling that we have no time for trips, and the weather has been tough — over twenty-two inches of rain so far as against less than ten inches last year at this time. I was sorry to see that George Bryden died. I liked him very much. Sorry I can't count on a trip east in June. I enjoyed my lunch with the committee so much."

Milton Kauffman wrote from Denver: "I have been looking forward for years to attending the fiftieth anniversary of our Class. It is with extreme regret that I must announce that it will be impossible for me to come, unless a miracle should happen. In my short life of three score years and ten, I have seen no miracles and I am not expecting to experience any. It would be a great joy to mingle with my old classmates again and to take part in the festivities. I hope you will all have a delightful celebration."

Other letters or reply slips received from distant points include those from Howard Dill in Richmond, Ind., Charlie Hanington in Denver, Lewis Dunham in New York City, Horace Brand in Chicago, Alex Moseley in Chicago, Jim Swan in Washington, Billy Keene in Great Neck, N.Y., Charlie Wood in Albany, N.Y., Anna Gove in Greensboro, N.C., and Edward W. Donn in Washington, D.C.

Birks writes from Montreal that the Canadian government will not give permits for pleasure trips and, therefore, he cannot attend our reunion. George Atkinson writes that he hopes to attend; he has recently moved to Summit, N.J. Ethel Blackwell Robinson writes from Upper Montclair, N.J., that, owing to the recent death of her husband, she does not expect to attend the reunion. Arthur W. Pierce writes from Pittsfield, Mass., that he has retired from the General Electric Company. He expects to attend the reunion.

Linfield Damon's daughter Priscilla was married on March 1 to William Russell Fawcett, and they will live in Los Angeles, Calif. Priscilla was graduated from Vassar College and studied in London and Paris.

The following appeared in the Brookline, Mass., *Chronicle*: "Mr. Gorham Dana, chairman of the Brookline Planning Board, and said to be 'one of the men who have done the most for Brookline', (he flatly denies this) was born in Charlestown, where his father was

once Mayor. Settling here shortly after his graduation as civil engineer from the Massachusetts Institute of Technology in 1892, Mr. Dana became manager for the Eastern Underwriters Inspection Bureau, from which position he resigned in 1929 to remain as its consulting engineer. . . .

"Mr. Dana has two special hobbies. One is photography, especially colored moving picture films. He made a trip around the world in 1934 and has films of the entire trip. His second hobby is bird-banding. The point of banding the birds is to study their migrations and habits. Birds are caught in a trap, banded with a little metal ring supplied by the Government, then immediately released. Each band has a number and if the bird is already banded, the number and the species of bird is reported to Washington, together with the date noted. One must have a special banding permit, which, of course, is only granted to those who have a knowledge of birds. There are about five thousand bird banders in the whole country. Very few humming birds are trapped since they are too light (a twelfth of an ounce) for the ordinary trap — only six were banded in 1939. Mr. Dana devised a special trap for humming birds and has been able to band several in the last two or three years. What a splendid hobby for the training of patience — or it may have been the patience developed in planning the affairs of Brookline that resulted in what it takes for bird-banding!"

Frank Howard, Gorham Dana, and Ernest Tappan attended the midwinter meeting of Boston Alumni. — Barney Capen moved to 364 Union Avenue, Framingham, Mass. He and Mrs. Capen have a very pleasant first-floor apartment, with a man nurse, so that Barney has good care and is most comfortable. Several '91 men have been to see him, and visitors, especially classmates, are most welcome.

The Alumni Association has notified us of the death on January 27 of Frederick B. Gaenslen, whose last address was Houston, Texas. John C. Cole, who lived in Newton, Mass., died on March 13.

The following changes in address have been received: George T. Atkinson from Limington, Maine, to 128 Ashland Road, Summit, N.J.; Harmon Wendell from Detroit to 4257 Clybourn Avenue, North Hollywood, Calif. Charles Garrison's new address is 501 East Pedregosa Street, Santa Barbara, Calif., and Edward R. Wait's is Pigeon Cove, Rockport, Mass.

— HENRY A. FISKE, *Secretary*, Grinnell Company, Inc., 260 West Exchange Street, Providence, R.I. BARNARD CAPEN, *Assistant Secretary*, 364 Union Avenue, Framingham, Mass.

1895

There are times when there is a great dearth of class news. This is one of them. While sojourning in the enticing climate of Florida, it is difficult to keep in touch with the mails, and possibly some class letters have gone astray or are waiting the return of your Secretary to Ayer, Mass.



Florida climate has been victimized this year by the erratic behavior of the weather north of Mason and Dixon's line. The sun, when shining, however, is just as bountifully hot as in normal winters, and when one can anticipate the rise and fall of the thermometer by the changing of one's red flannels, the weather in Florida is just perfect.

Don't forget your Secretary has a responsibility to assist in the editing of these columns. A word or two from any one of you will be greatly appreciated. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass. JOHN H. GARDINER, *Assistant Secretary*, 10 Clinton Place, Mount Vernon, N.Y.

## 1896

The grist is not very heavy this month, as only a few items have come to the attention of the Secretary. At the time these notes are being written, the last of March, Rockwell is away on one of his trips to his old home town, Harriman, Tenn., to visit his relatives and to look over their industrial interests. Myron Pierce and his wife are about to leave on the clipper for an Easter vacation in Bermuda. Karl Pauly's reply to the reunion questionnaire was mailed from the Hotel LaConcha at Key West, Fla., which fact would indicate that he was indulging in a southern trip. Dave Beaman has recently returned to New Bedford from a three weeks' trip to Texas and New Mexico. After having worked so hard for so many years, producing gas and electricity for New Bedford and environs, Dave is apparently now able to kick up his heels and carry out some of his long-cherished plans for travel and other hobbies.

O. B. Denison, able Secretary of the Class of '11, has sent a clipping from the Worcester evening *Gazette* of March 3, which states that James Fuller, son of our classmate Bob Fuller of Worcester, is among 107 students on the honor roll of the College of Fine Arts at Syracuse University. He is in his junior year and is majoring in illustration at that institution, where he is a member of the staff of "Onondagan," the student yearbook.

Lythgoe has kindly sent a reprint of his article on the work of the Massachusetts Department of Public Health under the bedding laws during 1940, which appeared in the March issue of the *Bedding Manufacturer*.

Frederick E. Field died in Montreal on January 27. He was born on November 16, 1873, the son of David C. G. and Lucy Ann (Hayden) Field. He married in Greenfield, Mass., on June 18, 1902, Edith Teresa Newcomb, who died on December 7, 1936. The children were Charles Newcomb, born on September 15, 1905, and Margaret Louise, born on May 14, 1910. From 1896 to 1901 Field was assistant engineer in the city engineer's office in Boston; 1901 to 1903, assistant engineer in the Bureau of Filtration, Philadelphia; 1903 to 1904, with Chapin and Knowles in Pittsburgh; 1904 to 1910, division engineer, Bureau of Filtration, Pittsburgh; 1910 to 1911, engineer, Pittsburgh Flood

Commission; 1911 to 1918, resident engineer, Montreal filtration works, and also from 1915 to 1918, resident engineer, Montreal aqueduct works; 1918 to 1920, assistant superintendent, water works, Montreal; 1920 until his death, filtration engineer, Montreal Water Board. He was a member of the American Society of Civil Engineers, the Water Works Association, the American Association of Engineers, the Professional Engineers of Quebec, Summerlea Golf Club, and the Montreal West Curling and Bowling Club. His particular recreations were curling and golf. He was the author of various papers in engineering publications.

Clark Holbrook died on March 11 at his winter home in Miami Beach, Fla. He came to M.I.T. from Yale University and was a special student in architecture. He was born on September 14, 1872, at Elmira, N.Y., son of Levi and Viola (Vowers) Holbrook. He married Mary E. Hendrickson in Havana, Cuba, and there was one child, Gerald Clark, born on May 24, 1903. Holbrook apparently had not followed the profession of architecture but was interested in many corporations, and until his retirement a few years ago, he engaged in business and finance. We recall with pleasure the presence of Holbrook and his wife at some of our reunions in Osterville. He was a member of the Order of Cincinnati, the Society of Colonial Wars, Mayflower Society, Huguenot Society, Red Bank Country Club, Lotus Club of New York, New York Yacht Club, Surf Club, and the Committee of One Hundred of Miami Beach. — CHARLES E. LOCKE, *Secretary*, Room 8-109, M.I.T., Cambridge, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge, Mass.

## 1899

Gleanings have come to me during the past several months from all points of the compass — not enough in any one month, however, to make up any news. Now I have gathered the gleanings together for the benefit of all.

Arthur B. Foote of Grass Valley, Calif., has sent me an interesting pamphlet entitled *Unemployment, Its Causes and Cure*. I would like to quote it in its entirety, but space prevents. I am sure that Foote would be glad to send copies to anyone who asked for it. — W. E. PARKER, writing from 1100 Southeast 6th Street, Fort Lauderdale, Fla., says he is endeavoring to hold up his end in civic and municipal affairs. He laments, though, that he has not seen a '99 man in years and he lives in hope that one will go that way some day.

Gardner Barry at Sandwich, Mass., reported that he was with Charles T. Main, Inc., on construction work at Camp Edwards, Mass. He found Henry Eaton working on the same job, and they renewed acquaintance. — Charles A. Smith of the Georgia Power Company gave me generous bits of news of others but not much of himself this time, except that he had been through Washington en route to the convention of the American Transit Association. He missed seeing

me, a matter of regret to us both. Smith told me, however, that J. Walter Allen, electrical engineer with the Boston Elevated Railway Company, served as president of the American Transit Association during the past year.

Burt Rickards, State Health Department, Albany, N.Y., spent his vacation at Marblehead, Mass., and Cape Ann. In Annisquam he looked up Ellery, whom he would have known anywhere. His hair was just as white as Rickards'. — Edwin Sutermeister wrote from Westbrook, Maine, that he occasionally sees Kingman, and once he ran across Walton in Madison, Wis., and hasn't recovered since. Walton was wearing a beard.

Dudley Pray retired a year ago as lieutenant commander. — James C. Dryer is living at 2 Greenfield Lane, Rochester, N.Y. About a year ago he resigned as vice-president and director of James Cunningham Son and Company and retired from active business. The days have not been long enough since to do all the things he has been putting off for lo these many years.

Lew Emery writes from the President Hotel in Atlantic City that his health is much improved. This is good news to his friends. — Charles R. Greenlaw, 140 New Montgomery Street, San Francisco, Calif., wrote not long ago that he hoped soon to be retired as a telephone engineer. He also told me that, by the accident of inheritance, he was possessed of a waterfront farm on Deer Isle, Maine, and he would pay class dues ten years in advance if I would sell it for him.

From Jacob Stone, Jr., 1108 Nicollet Avenue, Minneapolis, Minn., I learned the sad news that Chuck Watrous of Des Moines, Iowa, died on December 25. — Miles S. Richmond spends a great deal of time filling out War Department questionnaires and holds a commission as major of the United States Army Reserves.

Herbert Dakin has been spending at least some of the winter in Fort Myers, Fla. Samuel B. Robertson is now in Forest, Va. Harry M. Keys, erstwhile of Maitland, Fla., may now be reached at 1335 Waverly Road, Kingsport, Tenn. Frederick R. Sites, formerly of New York City, is now with the United States Steel Corporation of Delaware, Pittsburgh, Pa. Edwin Bergstrom of Los Angeles, Calif., is temporarily residing at the Hay Adams Hotel, Washington, D.C. — A good many of the men of '99 are getting to Washington. Newell of the Bath Iron Works Corporation is a frequent visitor. David C. Churchill of the Churchill Weavers, Berea, Ky., has been here on business with the wage-hour board.

It is with regret that I announce receipt of news of the deaths of the following members of the Class: Edward H. Hammond on November 28; Willard A. Price on June 25; Philo R. Hoefer on August 11; Worthington Palmer on July 2; Edwin H. Hewitt on August 11, 1939; and Charles D. Waters on March 13, 1940. — W. MALCOLM CORSE, *Secretary*, Westmoreland Depot, N.H. ARTHUR H. BROWN, *Assistant Secretary*, 53 State Street, Boston, Mass.

## 1900

A large number of the Class turned out for the midwinter alumni dinner at Walker Memorial in February. Among them were Allen, Fitch, Neall, Newhall, Russell, Wedlock, and Ziegler.

Dick Wastcoat said that he had a delightful time in St. Petersburg, Fla., from January to the middle of March. He motored down and back. — Fred Everett, state highway commissioner in New Hampshire, was re-elected a director of the Association of Highway Officials of the North Atlantic States at the seventeenth annual convention of that organization at the Hotel Statler on February 19.

February 16 marked the opening of the new Huntington Avenue subway in Boston, the second largest project ever undertaken by the W.P.A. It is second in size only to the La Guardia Airport in New York. As many as 2,800 men have been employed on the subway at one time, and the work was carried on day and night. Our own Wilbur Davis, chief engineer of Boston, conducted a party of officials and local highlights through the tube on the first train. What next, Wilbur? — Ike Osgood and his son left by boat for Jacksonville, Fla., the latter part of March for a motor trip in that state. Ike wrote for addresses in that vicinity, and of course we sicked him onto Happy.

The sympathy of the Class is extended to Sumner Manley. A notice received from the Cincinnati *Enquirer* told of the death of Mrs. Manley on February 13. Interment was in Brockton, Mass.

One of the boys sent word that Allen and Neall are both in the engineering department at Camp Devens, Mass. A notice received at The Review Office follows: "Because of the many requests from friends and admirers of Carleton Ellis, who passed away on January 13, asking whether the laboratories were to continue, we wish to say that the laboratories are so set up that they will definitely continue in business as a consulting research laboratory. . . . It will be of interest to readers of The Review to know that it is planned to continue publication of the many books for which Mr. Ellis was noted. At the time of his passing, a third volume on synthetic resins was in preparation, and it is expected that this particular work will be ready for publication early in 1942. Also, a handbook of plastics written by Ellis and Herbert R. Simonds is being prepared for publication in September of this year. . . ."

Tom Perry sends his best to all the Class. We met him in the Monticello Hotel in Norfolk, Va., and in the few minutes before his train left for the South we discussed a number of subjects. He promised to be present at the next reunion. — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston, Mass.

## 1901

Mr. Kennedy of The New Ocean House at Swampscott, Mass. (only eleven miles from Boston), promises the enthusiastic

co-operation of every member of his staff to make our fortieth reunion a truly enjoyable occasion. So do not forget the dates, Saturday and Sunday, June 7 and 8, and send in your acceptance card if you have not already done so. Come on June 6 if you can and stay till the ninth so as to attend Alumni Day at M.I.T. and the Alumni Dinner at the Hotel Statler in the evening. We wish the war could be finished before then and all totalitarians banished forever. However, there will be no dictators at our fortieth reunion. You can golf or swim or do a lot of other things or just be sociable and thoroughly enjoy renewing old friendships. Lammot du Pont, our President, and a number of other classmates have already declared their intention to be present. Ed Davis says, "Yea, verily," he will be there. Ed, who modestly says he is "general maid of all work" for the Scovill Manufacturing Company at Waterbury, Conn., also stated he "recently played as grandpa in his civic theater's production of *You Can't Take It With You*" and was "seriously thinking of taking up its philosophy as a life profession of faith."

Phil Moore, Vice-President, Poor and Company, Chicago, who is likewise planning to attend the reunion, has sent in an interesting newspaper clipping about Wilford DeBerard, who has recently been appointed city engineer by E. J. Kelly, Mayor of Chicago. DeBerard, who has been western editor of the *Engineering News-Record* for more than twenty-five years, was selected for city engineer because of his vast knowledge of waterworks and sewage disposal plants, especially expert advice being required in connection with the completion of the \$21,000,000 filtration plant now under construction at 78th Street and the lake.

Another Westerner, Arthur Jewett, II, has recently been appointed consultant, research program of the General Motors Institute at Flint, Mich., and has been very busy in establishing an educational and training research department at that institute.

Nat Patch, who had only one good eye when he was at Technology and has since then practically lost the sight of that eye, has nevertheless continued to carry on successfully as secretary and advertising manager of the Lumen Bearing Company at 197 Lathrop Street, Buffalo, N.Y. Furthermore, notwithstanding his handicap, Nat is planning to attend the reunion, and we suggest that it would be splendid for any other '01 man from Buffalo or beyond who is coming to the reunion to get in touch with Nat and arrange for enjoyable companionship on the trip to Swampscott. The Class was also honored by another member of the Patch family, namely, Dan Patch, who is not related to Nat. Dan also started with '01 but his Spanish-American War service forced him to finish with '02. He writes that he also hopes to be present on Alumni Day, provided he is not tied up by some special construction work. Dan has for about twenty-seven years been associated with the Morton C. Tuttle Company at 862 Park Square, Boston, in helping indus-

trial concerns "decide whether they want to build, what they want to build, where they want to build, and when they want to build, and then do the building."

Louis Williams writes that last spring he accepted the managership of the Detroit office at 272 Hotel Statler, Detroit, of the Engineering Societies' Personnel Service, Inc., which is under the direction of the Engineering Society of Detroit, the American Society of Civil Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, and the American Institute of Mining and Metallurgical Engineers. Williams said the need for technical men in the Detroit district had justified the establishment of this service and that he was finding it very interesting work.

Henry Chambers, who is retired, gives his present and permanent home address as South Street, Litchfield, Conn., and writes: "I am happily located in the afternoon of a busy life among old friends and familiar surroundings in this delightful New England village, which is still Republican in politics and went strongly that way last November, even though the state of Connecticut did not. For the first time in twenty-five years I have used both transit and level and before long expect to have the information obtained properly plotted as we did in the good old days when we went to Wellesley Hills." Chambers also wrote: "I have just returned from a motor trip to Georgia and North Carolina with a Yale classmate who is a most enthusiastic hunter and seems to have hunting dogs in training all through that country. For a fellow like myself, born and brought up in the city, it was a new and most interesting experience to see the well-trained dogs go through their routine. Some were amazing in the intelligence they showed, and others behaved like unmannered humans." He stated he planned to attend the reunion, and we trust nothing will interfere.

A. Rosecrans Baldwin, who was graduated from Yale before starting at M.I.T. and who, because of illness, did not finish his course at Technology, writes that he nevertheless has always kept up his interest in Tech and regrets that illness, which over a year ago forced him to retire as vice-president of Tenak Products, Inc., of Chicago, will not allow him to attend the reunion.

Willard Dow, Assistant Secretary of the Class, writes that he has accepted an appointment as field auditor in the Quartermaster's Corps of the Army. However, he is arranging for the continuance of his office as a certified public accountant at 20 Beacon Street, Boston. His present business address is 4300 Goodfellow Boulevard, St. Louis, Mo., but his permanent address had best be stated as his home, 66 Kensington Lane, Swampscott, Mass. Willard says the new work is very interesting but that it is keeping him so busy he is afraid he will not be able to attend the reunion.

Charles Mace, V, who is executive secretary of the Synthetic Organic Chemical Manufacturers Association at 260



## 1901 Continued

West Broadway, New York City, writes that he recently had a small reunion at India House in New York City with Bill Vermilye, Vice-President of the National City Bank of New York, and Charley Tufts, Vice-President of the Allied Chemical and Dye Corporation. Vermilye and Tufts have already signified their intention to be with us at the reunion, but Mace said he feared he could not attend because of an association meeting, although he would try to duck out and so perhaps be with us part of the time.

Russ Putnam, research engineer for the Waterbury Clock Company at Waterbury, Conn., and a special friend of Ed Davis, writes he and Ed meet frequently at the University Club and are already reminding each other that they have a date next June 7 and 8.

Ted Lange of Springfield, who expects to attend the reunion, writes that he has just heard that Albert Casani, I, has been promoted from the position of assistant to the chief engineer of the American Bridge Company of Pittsburgh, Pa., to the position of assistant to the president of the company.

The Alumni Office advises the following changes of address: Joseph D. Evans (Vice-President of the Class), Apartment 36, 1509 Sherbrooke Street, West, Montreal, P.Q., Canada; Clifford R. Hammond, 802 Elmwood Avenue, Buffalo, N.Y.; Charles A. Record, 326 Washington Street, Wellesley Hills, Mass.

We also much regret to have to announce two additional deaths, those of George E. Frost, VI, on September 12, 1938, and Prescott H. Cummings, II, on February 24. Cummings' last address, which had been missing for many years, was given in the April Review, but the Alumni Office gave no additional information regarding either Frost or Cummings. — ROGER W. WIGHT, *Secretary*, The Travelers Fire Insurance Company, Chapman Building, Portland, Maine. WILLARD W. DOW, C.P.A., *Assistant Secretary*, 66 Kensington Lane, Swampscott, Mass.

## 1902

Hunter became a grandfather last December with the arrival of Prudence Bradstreet Kimball, daughter of Alice Hunter Kimball '36. Fred reports that Prudence may follow in her mother's footsteps and become a Technology co-ed. — Much to your Secretary's surprise, it was learned from the February Review that Dana Fisher has a son, Robert G. Fisher, in the freshman class at the Institute.

Announcement has been made of the engagement of Anne Tucker Payne of Charleston, W.Va., to Francis Boyd Vaughan '33 of Worcester. The latter is the son of our classmate, Louis E. Vaughan. At the present time Francis is located at the Belle works of the E. I. du Pont de Nemours and Company at Belle, W.Va., as assistant superintendent. — Walter Teague is now president of the M.I.T. Club of Akron, Ohio. For years he has been in the insurance business in Akron. — Lester Hammond, who is chief engineer,

Borough of Manhattan, New York City, had a paper in a recent issue of the *Engineering News-Record*, in which he reported on the condition of concrete of various mixtures exposed to the waters of New York Harbor. We were interested to learn that concrete can be so mixed and molded that it will stand up to years of exposure to sea water. — Norman Borden is now located at 72 Railroad Avenue, North Andover, Mass.

Six of the Class gathered at the mid-winter alumni meeting and lunched together. This was a small gathering, but let's make it a large one on Alumni Day in June. — BURTON G. PHILBRICK, *Secretary*, 246 Stuart Street, Boston, Mass.

## 1903

Mortimer Y. Ferris, I, descendant of Elihu Yale, died on March 9 at Ticonderoga, N.Y. Ferris had been active in business, civic, and political circles in New York State and in Ticonderoga, where he lived most of his life after leaving the Institute. At the time of his death he was chairman of the Lake Champlain Bridge Commission, after sponsoring the bill that made possible the erection of the bridge itself. He was chairman of the Essex County Republican committee from 1930 to 1940, and state senator from the thirty-third senatorial district from 1919 to 1929. He had been president of the village of Ticonderoga from 1916 to 1918, chairman of the board of trustees of the Ticonderoga Hospital for the past twenty years, president of the Ticonderoga National Bank and the Ticonderoga Chamber of Commerce. In addition to holding these public offices, he belonged to many orders. He leaves a widow, two married daughters, and two brothers.

Mrs. Blaine H. Miller died on February 15 in Indianapolis, Ind. Besides her husband, she leaves a son and a daughter. — On February 15, Herman A. Scherrer, IV, died in Indianapolis where he was born and where he lived all his life. After being graduated from the Institute, he entered the architectural firm founded by his father, and, as a part of this firm, was closely associated with the building interests of his city. He designed the Cathedral High School, St. Patrick's Catholic Church, and the Elks Lodge. Since retiring in 1929, Scherrer devoted himself to photography. He traveled and studied abroad in the interest of bromoil transfers, and he was credited as being one of the world's leading artists in this particular field. He was in demand as a judge and contributor at exhibitions held throughout this country and abroad. He wrote many articles for photography magazines and was awarded medals and honorary mentions by salons in Japan, China, England, France, Spain, Belgium, Hungary, Italy, and South Africa. He is survived by his widow, Bess Buchanan Scherrer, and a brother, J. Anton Scherrer. We are indebted to the Indianapolis *News* for the above facts.

We are sorry to have only death notices this month. Before you read this, we shall have had a small dinner with about a

dozen classmates living near Boston, and I hope to get some more cheerful news for the next issue. Don't forget Alumni Day on June 9. If you are in Boston look up the Secretaries for information about a class dinner on June 7. — FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, 441 Stuart Street, Boston, Mass.

## 1905

Hold everything! Because of the fact that our old reunion center at Old Lyme, Conn., was obliged to accept full accommodations from another source for the week of June 7 to 14, Boxwood Manor will be unable to accommodate us for the planned dates, June 6 to 8. A questionnaire was sent, therefore, to every member previously attending an Old Lyme reunion, and a special class meeting was called for April 1 at Walker Memorial to decide whether to forego this year's reunion, to move to other quarters, perhaps on Cape Cod, or to choose a later June date for 1941.

Jim Barnes, VI, keeps bobbing into our records but always by proxy. The last we heard about him, he had been discovered by Bob McLean in Dallas, Texas. A letter trying to draw Jim out of his shell met no response, but Pete Harvey, VI, himself quite a news gatherer for this Secretary, inveigled Jim into writing. The address is still Dallas, Texas (3512 Binkley Avenue; someone may want to write him about the class baby or something). But let's listen to Jim: "Do you remember Whizz-Fish Barnes? A good many of the old gang have identified me through the years by that old song, the last being McLean, whom I had not seen since 1905. My path has been in the public-utility field for twenty-five years, winding up with a ten-year stretch, concluded in 1931, as president of the Louisville Railway Company. Since then I've taken a look at several things, including air conditioning, and am now in practice here in Dallas as executive engineer (distinguished from consulting engineer in that the latter only consults, while I am willing to work, too) and am engaged in introducing a new concrete process to the Texas natives. The only cloud is that I'm so far from Chicago, New York, Boston, and the other old, familiar haunts and that there is no association work to keep me in touch with old friends and their activities. I've done so much liaison and committee work in arranging co-operation and lubrication by and between organizations that I miss the atmosphere. Some day when you want an outside, unprejudiced, administration-experienced point of view, let me hear from you. It wouldn't be tough to take an engagement in any one of the big centers."

Ros Davis and Jim Fouhy come to bat in defense of the statement of the Secretary in the March Review, namely, that Ronan C. Grady, in spite of lack of status at the Registrar's Office was an '05 man in good standing. Fouhy remembers him as a member of the freshman band, and

1905 Continued

the 1903 "Technique" lists him. Our ten-year book refers to him as having once read his own obituary in connection with the loss (temporary) of the submarine K-5 in February, 1916. — John C. Damon, VI, comes up with the title of major. Of what, John?

The rest of the news regards deaths in our ranks. At last writing we had no details on the life of LeBaron Turner, I, but Pete Harvey again comes through with a bunch of newspapers which tell of the great esteem in which Turner was held in Geneva, Ill., where he was born and lived nearly all his life. The *Batavia Herald* speaks of him as taking a big part in the industrial life of the community. A brother-in-law, Dr. Charles Park of Boston, officiated at the funeral.

Bill Motter, Jr., III, sends us a clipping from a New York paper telling of the suicide on February 14 of E. Logan Hill, II, at his winter home at Miami Beach, Fla. Ill health was ascribed as the cause. Letters to the Secretary during the past few years in regard to the possibility of Logan's attending reunions indicated a heart weakness that was keeping him close to retirement. Members of Course II will remember Hill as a member of the old duck-on-the-rock gang which met regularly for practise in the open lot in front of Engineering A. Logan's most recent position was general manager of the Erie Railroad. Much of his later life was spent at Lincoln, Ill.

The death on February 17 of George H. Champagne of Maynard, Mass., is reported. He was a special student in Course I for part of our freshman year. — FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston, Mass. SIDNEY T. STRICKLAND, *Assistant Secretary*, 137 Newbury Street, Boston, Mass.

## 1907

In connection with his activities as Class Agent for the Alumni Fund, Lawrie Allen received a letter dated February 9 from Max A. Greenburg, who may be remembered by some of our Course III men. Max was connected with this Course from 1903 to 1905, coming to the Institute from Boston, but he had not been heard from since 1907. He is manager of the British Thompson Houston Company, Ltd., at Tel Aviv, Palestine. He writes: "You might be interested to know that my oldest son was graduated with honors from Emmanuel College, Cambridge University, last year and is employed with our firm in Rugby. My daughter, Miriam, who is now nineteen, is in the second year at Boston University. My second son, who is now twenty, is in his third year at the American University, Bayreuth, and would like to finish his engineering course at M.I.T. That is not possible, however, until the war is over, as the government does not permit any money to be sent from here unless a student left before the beginning of the war."

For the first time since 1907 I am able to give complete information regarding Tracy Smith, VI. For four years after graduation he was with the General Elec-

tric Company, both at Schenectady and in the New York City office, and then from 1911 until 1932 he was assistant engineer for Hugh L. Thompson, consulting engineer. In 1932 Mr. Thompson became consulting engineer for Scovill Manufacturing Company, Waterbury, Conn., brass mill products and manufactured goods, and Tracy, continuing as assistant, has been with this concern ever since. His family home is at 78 Newton Terrace in Waterbury. A daughter, Jane, married Keith Schönrock and also lives in Waterbury. They have a son, born in the fall of 1940. Tracy, Jr., is a member of Course XIII, Class of '42, at the Institute.

In the January Review was a statement regarding Allan Cullimore and his position as regional adviser for national defense training, but I was not able then to give the facts with reference to his activities since 1907. For two years after being graduated he was an assistant in civil engineering at the Institute and then for two years was superintendent of construction for the city of St. Louis. About a year as designing engineer for Spreck Foundry Company followed, and then in 1912 his long-continued experience as an educator and college official began, when he became dean of engineering at the University of Toledo. In 1916 he took a similar position at the University of Delaware, Newark, Del., but the World War interrupted his college work. In April, 1918, he went to Washington to take charge of reconstruction work at the Walter Reed General Hospital, and the following month he went to Canada with an American Red Cross party to study the work done in the hospitals there. In August, 1918, he became a major in the Sanitary Corps of the United States Army and was chief of educational service in charge of readjustment and rehabilitation of wounded soldiers at the Presidio in San Francisco and consultant for army hospitals west of Denver. On December 17, 1919, he re-entered college service, becoming dean of engineering at Newark College of Engineering in Newark, N.J., a position he filled so satisfactorily that in 1927 he became President of that institution and has been there ever since. In earlier years Allan wrote several articles, varying in subject matter from "The Theory of the Slide Rule" to "English Selections for Engineers," and from time to time he has made several public addresses, ranging from "The Pursuit of Happiness" to "Physical Reconstruction" and "National Defense," given in Newark during 1940. He is a member of the council of the Society for the Promotion of Engineering Education, chairman of the committee on engineers' civic responsibilities of the American Society of Mechanical Engineers, and a member of the American Chemical Society, Inc. He is president of the Robert Treat council of the Boy Scouts of America, and chairman of the boys' work committee of the Rotary Club of Newark. He comments, "My greatest achievement is to make friends with a group of able men, among whom are some of my class-

mates." Allan was married in 1912 but has no children. His home address is 158 Garfield Place, South Orange, N.J.

In several issues of *The Review* during the last four years I have been able to publish extremely interesting letters received from Samuel Rogers Taylor Very, written from various parts of the world. Sam is engaged in a business or profession where he isn't located in any one place, inasmuch as he has been a writer since 1932, using his name jointly with that of his wife, Gest Very. His permanent mailing address is Warehouse Point, Conn. Sam's latest letter was dated November 28, 1938, and I knew that another one would interest '07 men (and other readers, for that matter). So early in March I sent him a plea to write me again. Responding nobly, as you will agree, under date of March 12 from Tucson, Ariz., he sent the following fascinating letter addressed to me as "Dear St. Nick." Sam is the only person who ever gave me that nickname. "You pest! You cactus burr! You inescapable miasma! You Federal income tax! You Army draft! Here I've trotted about for two years to escape you, along pretzel-shaped routes, and you've blown in again with your blarney. Pry, then; I can do nothing with you, nothing."

"Two years ago it was my intention, during a trip about the rim of our country by auto, to take a peek at every one of my classmates who wanted to see me; none did. All were out, or eating, or busy, or harassed. Wherever I went it was the same thing, morning, noon, or night, from San Diego, Calif., where I started, on up the Pacific Coast through Los Angeles and Pasadena to Seattle, across the Canadian borderland states to the Windy City, thence to the Genesee Valley and to Albany. H. A. Sullwold, out; Win Soule, out; Floyd A. Naramore, out; Earle Reed, out; Sam Marx, out; Andy Rebori, out — or stuffing, or busy, very busy, making millions. All of them, harassed as anything, hardly able to pay their office rent from lack of time. Hundreds of jobs, all of them. Rich as Croesus."

"It got monotonous, learning how busy they were and how stuffed and how harassed and how rich. I finally quit bothering to look up any more of them. That was when I was abreast of Syracuse. Jimmy Vedder used to hang around there; and I knew he, too, was rich as Croesus, harassed and busy, a gourmet as plump as a peccary. The fact is that just then came warnings of the approaching hurricane of that year which was to pounce like war onto the bowels of New England. The wind grew ominous and the car teetered when the rain whipped by. Fat red apples grew black in that evil afternoon twilight; and the green trees heavy with fruit were converted in a few minutes from glories of form and color to bedraggled hags, tresses howling in the gale. Like dense flocks of blackbirds their apples with their leaves made for cover in the grass. Many orchards were ruined far west of Albany on Route 10. That night, to put up at a farmhouse, I



was forced to drive across a carpet of red apples. Further on where the road descended to the valley, it became a river ten feet deep. Later the bridges gave way, or their approaches weakened so there were many detours; and next morning the Pittsfield bridge was reported impassable. I was desirous of visiting my birthplace, Warehouse Point, Conn., which is not far to the south and east of Pittsfield, but I couldn't cross the intervening country anywhere north of Peekskill. It took me three days from Albany, when one would have done ordinarily. All through that beautiful country, especially in the Connecticut River Valley north from Middletown, the elms of my boyhood delight — giants planted by Revolutionary soldiers and some by my ancestors — lay clawed into the sod, uprooted in a single storm after they had laughed at so many storms before then. Undermined by rain, they were now gone with the wind, withered dead things fit only for the funeral pyre.

"Though I crept halfway to Boston past great highway washouts, I gave up, finally, and turned south, leaving my New England to the undertakers. They did a good job of it: there's not a vestige of the wrath left; all is happy green again, as if the storm had been but a tiny nightmare caused by indigestion. Do you think, St. Nick, the same will be said of the second world war, years hence?

"I wintered in Florida, on the Gulf side, at Fort Myers, where the great Edison's crowning greatness had been expressed by a small chunk of synthetic rubber he had made out of goldenrod in his laboratory there. You may fish, at Fort Myers, standing like a democrat alongside anybody, dressed fancy or plain, on the magnificent bridge which crosses the Calloosahatchee, and catch sea trout if you can. Or, you may charter a doggy launch with a cap'n and the fixin's and have the best sea fishing of the Gulf, off Sanibel, provided you've got as rich as our classmates.

"A month came, though, that I couldn't stand still, even, in Fort Myers, without little globules of Florida sweat trickling down all the surfaces of my sweltering body into my shoe tops, and I left. I left swiftly, in early June, for the beautiful northwest that begins outside of Chicago and goes on and on in increasing loveliness across the glories of America, dipping to the yellow Missouri or winding upward to ozoned forests in the plateaus of clean grain states. Far beyond the mighty Father of Waters you are astride the Rockies, and frost tussles at your tropic lungs; and you shiver at night, as I have done pleasurably so many times, beginning with trout expeditions of my youth in the northern parts of New England and southeastern Canada. In June the snow melts sufficiently to permit approach to the Yellowstone via Cody, Wyo. The day after I had entered that beautiful park I snagged a seventeen-inch rainbow in the Firehole.

"Did you ever see the effect of Spanish perfume upon a bull fresh come from the *ganaderia*? Oh, but he's mad, or glad, or

something, sniffing there in the sunlight, rolling his bloodshot eyes at the marcelled toreador facing him in the arena. Pawing and snorting, Mr. Bull lowers his muzzle to earth and communes with nature. Well, I was like that then, fish oil my perfume; I was out for blood. Where to go? I wanted fly-fishing as I had had it in the East; no worms for me. No siree; I was a sport from tenderfoot land. . . . So, I fished in the morning, early; and I fished in the evening, after dark; and I fished in the sun and in the rain and in the cool of moonlight atop the Rockies, with bears about sometimes, and sometimes mule deer; but narry another buster did my perfume bring to my greedy nostrils. So I quit asking the sports where to fish, and I tackled the Levi-wearers of the Great Divide. Where, I asked them, do your big boys swim? Everyone I asked told me something different; there were the Tetons; there was the tumultuous Madison below mad Hebgen (Hebgen Reservoir, Idaho); there was Hebgen itself. But one said, take note, 'Idaho in the panhandle,' where the Snake comes out of the ground as a full-fledged stream an eighth-mile wide, as clear as Libby glass and as cold as a swim off Pemaquid. Big Springs, Idaho, is where I went, high in the lodgepole pines there — higher, I think, than an eagle will soar taking off from the baldpate of Mount Washington. . . .

"This stream, the Madison, is one of the sources of the tortuous Snake that flows like a sickle about Idaho and leaves that state 750 feet above sea level, eventually to become one of the Columbia's tributaries. You can't take the big fish right at Big Springs; they're too valuable to the Targhee National Forest. But a mile below, in the same stream and in all of its feeder streams, you can take them. You may fish for their sisters and their cousins and their aunts any way you like, and also for steelheads and Dolly Vardens and eastern brookers, which are practically no relation. You may use worms or flies, and at the time I mention, it was legal to use salmon eggs. I stuck to flies, and the trout stuck to their streams, mostly. But some sports at the resort took many three-pound eastern brookers (speckled trout) from Henry's Lake, which is a dammed portion of one of these streams, the biggest kill being long after dark had brought out the huge moon, and was made with wet flies tied locally.

"Well, I'd only pawed the ground by now, and rolled my eyes, but I was snorting mad from the perfume. The picadors had at me. Where was *el matador*? I snuffed and talked and wrote before I learned where, and what I learned made me think that the whole northwest was full of trout. Perhaps Priest Lake would be best: 'the most beautiful lake in North America' was how it was described by the chief forester of Idaho. So I went north to Priest Lake in the panhandle of Idaho near the border of Canada. A neighbor was taking sixteen-inchers to twenty-four inchers daily; I took none. He was fishing with bait weighted to lure at fifty feet

deep and was trolling; I stuck to New England virtue and my eastern flies. I tried all over the lake without luck. And then, late that summer I saw the matador too late. He wasn't at Priest Lake at all, any more; he was at Coeur d'Alene, Idaho. I was madder than ever, but weary, for the year was aging now and winter would bring 40 degrees Fahrenheit below freezing; I had no wish to freeze in with the Levi-wearers. So I wended my way southerly over the magnificence of the Jerome Mountain, where the road hairpins upward relentlessly for over twelve miles, and slid down through Flagstaff and Prescott into the tranquility and sunshine of Phoenix' Salt River Valley. There I spent the winter. Once arid, it is now a garden of Eden because of the marvelous projects of irrigation made possible by a system of dams. Sam Coupal was there, and he was *in*, God bless him, and cordial. But he, too, was weary and he was busy and constantly harassed, for his job is big and it takes him all over the vast mining regions of Arizona as the head of a mining commission which requires liaison between the operators and the government.

"I'm now wintering in Tucson, a beautiful wintering place, too; but meanwhile I've gone back to that marvelous panhandle of Idaho and spent three months in it. Some day I may build there, if the war permits, for I know of no better summering place. There are practically no mosquitoes or flies, and where I lived the lightning storms, which are the curse of northwestern forests, strike far off, gently, as the kettledrums do before you really hear them at the symphony. But if ever I want to eat trout there, I'll have to use worms; and if I want to 'git along with the folks,' I'll have to tuck in one leg of my Levis.

"Will the war permit, St. Nick? There is said to be a crisis, an emergency. I offered my services last May — any capacity — and have since, several times. So far nothing but red tape, politics, clerical nonsense. We Amurikins learns slow. — Git along wid youse, now, and let me alone for awhile. Pssst!" — BRYANT NICHOLS, *Secretary*, 126 Charles Street, Auburndale, Mass. HAROLD S. WONSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

## 1909

Allen Jones, superintendent of the Muscogee Manufacturing Company of Columbus, Ga., delivered a talk, "Personnel Training for Textile Industry," at the textile session of the spring meeting of the American Society of Mechanical Engineers at Atlanta on March 31. In response to my request for information regarding his family, he states that his daughter, Jane, was married on September 21 to Edwin L. Clarke, a lieutenant in the 29th infantry, United States Army; that his elder son, Allen, Jr., is a lieutenant on active duty with the 17th engineers battalion of the Second Armored Division, Fort Benning, Ga.; and that the younger son, Cadwallader, is a junior

## 1909 Continued

at the Citadel, the military college of South Carolina, Charleston, S.C. Allen seems to be doing pretty well for the country these days!

Mollie Scharff tells me that his son Samuel '43 was runner-up in the individual collegiate *épée* championship meet held at New Haven on February 22. — Did you all see in the March 17 issue of *Life* the pictures of a pack of hounds running down a coyote on Charlie Belden's ranch in Pitchfork, Wyo.? According to Charlie, "Wyoming sheepmen have long employed packs of hounds to run down coyotes, the night raiders of the range. Recently this warfare has been mechanized by transporting the dogs from camp to camp by truck."

Here's something for you fellows to be thinking about. Let's have your reactions! To be sure, our thirty-fifth reunion is still three years off, but Paul Wiswall's idea has real merit: "I have an idea for our next reunion. I think it would be a fine scheme if we requisitioned the services of Harry Worcester '97 and had him turn over one of his fine banana ships to the Class. There were about 115 passengers on the ship that has just taken me to the Canal Zone and the banana ports of Costa Rica and Guatemala. That's approximately the right number of classmates for our thirty-fifth."

"The Canal Zone is a busy place now, and it is a very nice place to visit in February, for the weather is like the softest June in these latitudes. I get a great lift as I see what we have done there. Just now you can see great activity, since the canal is so important a place in our scheme of things."

"But the place I'd pick out for our reunion would be the capital city of Costa Rica. The hotel there is excellent. I was greatly interested in the initials on the bedspread in my room. To my utter surprise I saw the very familiar W.A. in old English letters, the monogram of the Waldorf-Astoria Hotel. How come? I decided that the trusty Waldorf had rejected a lot of spreads and they had been sold by the manufacturer to the readiest buyer. I soon learned that if I had been a bit more observant, I'd have seen that the bedstead was of brass and very late Victorian, and it had been painted a neutral color. Come to find out, the beds all over the hotel were bought when the old 34th Street Waldorf had the sale of its furnishings. Perhaps I slept in the bed that enfolded Li Hung Chang when he was there in 1898!

"San José is a mile above sea level, right in the mountains. It is like cool September up there. The city is so clean that when one of our party went to the edge of the sidewalk to toss some circulars into the gutter, he took a look and told himself that he could not discard anything in so spotless a place. He took them back in his pocket to New York!

"Some of us chartered a car to drive to the highest near-by peak. It is a volcanic mountain, Irazu, over 11,000 feet high. The roads were smooth concrete and as good as the Merritt Highway to drive on. In all my travels I have not seen such

magnificent scenery since I was in my beloved Java. I should add a word about the railroad that crosses from the Caribbean Sea to the Pacific. It is 103 miles from Port Limon, where our ship was. For about fifty miles the way is on a sea-level plain with coconut palms, sugar, bananas, and cacao. Then for about fifty miles the traveler climbs a mile — about a hundred-foot rise per mile! He leaves the palm for the pine, and all along he is in the gorge of a beautiful, foaming, green river. I think Father Main would know of the efforts of Miner C. Keith to build that railroad about sixty years ago. It was a monumental job, and the work was beset with terrible odds. It was finished, nevertheless, and serves its purpose well. I am sure that if we get Harry Worcester's ship, he will throw in the railroad for our use. Let's have the reunion in February or March and duck some of the weather I had before and after my trip. We'd have the palm on all class reunions if we took this tip!" — CHARLES R. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass. *Assistant Secretaries*: PAUL M. WISWALL, MAURICE R. SCHARFF, New York; GEORGE E. WALLIS, Chicago.

## 1910

The following letter was received from Herb Reynolds. Your Secretary appreciates his help in furnishing news and wishes that other classmates would be as helpful. "It has seemed to me from time to time that the Class does not help out very well in furnishing you with news which might pad out the class notes in *The Review*. I have certainly been as lax as anybody, because I don't believe I have written you more than two letters. As I think you know, I have been with the Lamson Corporation for the last twelve years. Last summer they pulled me into the factory at Syracuse, and a couple of months ago they made me works manager. While we're not a very large organization, having only about three hundred men in the factory, the work is interesting as we manufacture a varied line, covering pneumatic tubes and conveying equipment of all kinds. We have recently completed two large elevators for airplane carriers, for taking the planes from the hold to the deck, and are now working on other defense work, as are so many other industrial concerns. It is quite a step from carriers to machine-gun tripods with all their windage and elevating adjustments, and it has been quite a problem to tool up and get into production. I attended the last meeting of the local Technology Club and met an interesting bunch of men. Most of them, however, are so young that I'm beginning to have it impressed upon me that we belong to some of the older classes. If anyone of the old crowd is anywhere near Syracuse, I sincerely hope he will take the time to give me a ring."

Guy Harcourt recently called on your Secretary. Guy is with the Buffalo Foundry and Machine Company and was in Boston on business. — Jimmy Noble is now located in the state architects'

division at Springfield, Ill. He lived in China for a number of years and returned only when conditions made such a move necessary.

The following excerpt is from the *Washington Star* of March 12: "Kenneth P. Armstrong hails from the section of the country where men believed taxation without representation was tyranny — and fought for their belief. The Minute Men settled the point once and for all — for all the country except the District of Columbia. Mr. Armstrong is carrying on from there. The tall New Englander, who is now treasurer of the Federation of Citizens' Associations and Chairman of its Committee on Membership and Credentials, came to Washington 25 years ago and promptly adopted the Capital's problems. For 25 years he has asked, 'Why should people pay taxes when they have no voice in the Government?' And he has maintained, 'The men who wrote the Constitution had no such ridiculous idea as that Congress should act as a city council for the District of Columbia.' As he talks he likes to pick up a pencil and make neat little rows of check marks on the pad before him. Instead of writing his Government reports, he prints them in small, clear letters. His reports concern claims against the Government in the construction of public buildings. He is now with the Public Buildings Administration of the Federal Works Agency and lives at 1840 Shepherd Street, N.E."

Charlie Greene's daughter Eleanor, a sophomore at Mount Holyoke College, has been elected chairman of the judicial board. — Jack Babcock's son, Willard, who received his master's degree at Technology in 1939, recently married Jane Sweet. — Harold Akerly's daughter, Constance, was married to William Sanderson of Boston on March 8. — HERBERT S. CLEVERDON, *Secretary*, 46 Cornhill, Boston, Mass.

## 1911

"Spring has come," as the feller sez, and these March-written notes will break just about five weeks before that eventful first week end in June, when we celebrate our thirty-year reunion at Plymouth on June 6, 7, 8, and at Alumni Day, celebrating the silver anniversary of "Tech in Cambridge," on Monday, June 9. Hurry, hurry, hurry and send in that reservation if you haven't already done so. Come for as much of the reunion as you are able, even if it's just for the Saturday evening banquet or the Sunday dinner, but *come!* You who read these notes are the backbone of the Class, the supporters of the Alumni Fund, and yours is the task of a missionary both to get classmates to come to the reunion and to persuade them to support the Fund for the coming year.

Here endeth the sermon. No, keep your seats, there'll be no collection at this point. History is in the making. This year for the first time we'll have one of our co-eds in attendance, for June Adkinson, V, clinician at Peter Bent Brigham Hospital in Boston, who attended our last class dinner in Walker Memorial,



1911 Continued

now writes: "Please include me in your plans for the thirty-year (!) reunion from the afternoon of June 7 until late Sunday evening or early Monday morning." Two others who plan to attend this year for the first time are Johnny Wilds, II, President of Protection Mutual Fire Insurance Company, Chicago, who will come "if possible to tie it in with a business trip east," and Ralph Walker, IV, of Voorhees, Walker, Foley and Smith, architects, New York, who says: "I certainly hope that it will be possible for me to attend the reunion in June. However, I am practically commuting to Trinidad on defense planning, spending every other month there, and may be away at the time of reunion, but I hope not."

Those of us present at our twenty-year reunion at Douglas Hill, Maine, remember the two Seeley boys, then eight and ten, who, with the Denison youngsters, added much zest to the affair. The following tribute to the younger of these two Seeley boys, written for the *Kent News* (Kent School in Connecticut), by the head of the school, tells of the tragic passing of this youngest son of Nat Seeley, II: "Tom Seeley died on January 12th. We have lost a boy who made a splendid record at Kent. He was outstanding in his studies and an enthusiastic participant and follower of sports. Tom had an independence of mind, a courage and a wit which won him a unique place in our life here. No one can take his place. Tom was only eighteen but he won the victory of eternal life. We are proud to have Tom's body buried in the little plot on the hill back of the Chapel. I am grateful to his family for this privilege. He and his family will always have a place in our prayers and our life here, and I know Tom will continue to bless Kent by his prayers and love." — The boy failed to survive an intestinal operation. Surely the bereaved parents and the rest of his fine family have our deepest sympathy.

Hats off to two Classmates who have risen high in the Army: George C. Kenney, I, now brigadier general, and Sidney P. Spalding, III, now colonel. Here is a digest of a recent story in the *Boston Globe*: "Col. George Churchill Kenney of Brookline and the United States Army Air Force is Brig. Gen. Kenney now and the Army has, in effect, taken one more step to exonerate the late Brig. Gen. William Mitchell. The two men were the closest of friends. Like the proverbial prophet in his own country, 'Billy' Mitchell was court-martialed by the Army and driven to resignation in 1926 because he charged its high command with incompetence and failure to recognize the effectiveness of aircraft. Three years after his death in 1936, Hitler started doing things in the air."

"It was in 1918 that 'Billy' Mitchell told Gen. Pershing . . . that 'if we can get well to the rear of the enemy with our air forces and have tanks jump on them in front, we will come pretty near to destroying the German Army.' During those years Brig. Gen. Kenney, then a first lieutenant in the 91st Observation

Squadron — he had enlisted at the war's outbreak . . . spent more than 100 hours over the lines in combat service. . . . He was shot down once with 11 machine gun bullet holes in his plane, but escaped with only a broken ankle. He won the Distinguished Service Cross for extraordinary heroism near Jamnetz, Oct. 9, 1918. The French Government awarded him the Croix de Guerre with three palms, and he was promoted to captain on the field of action."

"His friendship with Gen. Mitchell became close following the armistice when he went to Germany with the Army of Occupation as aid to the air chief. And he never forgot 'Billy' Mitchell's ideas. Back in this country, he was graduated from the Army Tactical School at Fort Leavenworth, Kan., and was one of the youngest officers ever graduated from the Army War College. He wrote a number of books and articles on tactical and aviation matters."

"Brig. Gen. Kenney was sent to Europe last February as an official observer in France, England and Italy. He was ordered home just before the blitzkrieg drive through the French lines, but according to Clare Booth Luce, who quoted him in her recent book, 'Europe in the Spring,' not before he had all the information necessary to bring our own air force up to date. It was pretty much in line with the theories of Gen. Mitchell. Brig. Gen. Kenney is now considered the leading authority on air tactics in the United States Army, and for a number of years he delivered a series of lectures on the subject to the Senior Class at West Point Military Academy."

"His recent appointment to the rank his former chief held has just been announced from President Roosevelt, and confirmed by Congress [mid-February]. 'Billy' Mitchell would have enjoyed that!" — We're proud of you, Heinie, and reading of you brings back fond memories of the old Technology Press Association when we used to scout Technology news for the various Boston dailies."

We're also proud of Colonel Spalding, now assistant executive to the under-secretary of war. We remember Sid as a tall, attractive lad, who entered with us in the fall of 1907, coming from Lowell and deciding to take mining engineering. After completing his freshman year, however, he received an appointment to the United States Military Academy and in due time was graduated. He has been an Army man ever since. He lives in Herndon, Va., and his office address is 2052 Munitions Building, Washington, D.C., where currently he is functioning as director of the planning branch, office of the assistant secretary of war."

Said the Boston *Transcript* on February 24: "Dr. Carl Stephens Ell, president of Northeastern University, turned practical engineer this morning and manipulated steam-shovel controls to scoop out the dirt for Northeastern's new \$325,000 laboratory building on Huntington Avenue. The new five-story building, a permanent unit in Northeastern's development plan, will have a floor area of

42,000 square feet and will be ready for occupancy in the fall."

In mid-March, while addressing 125 faculty members of Northeastern's day colleges, our classmate asserted that "we must give full support to the government for industrial production and the promotion of the arts of war, but nevertheless we must not lessen our emphasis on higher education as such. Democracy can endure only in a society where a high level of education exists and can flourish only when colleges and universities are preserved as centers of learning and places of intellectual discipline. . . ."

"It is, of course, possible to train people in the production of the means of war outside of the college or university, but education adequate to the preservation and promotion of a lasting democracy can be attained only through our colleges and universities. They are the only storehouses of knowledge which, at one and the same time, possess the means through their laboratories, libraries and faculties of developing the disciplined minds which democracy will need so greatly in the future. It is for us not a question of education or training, but rather of education and training."

Stu Copeland, II, President of Northwest Paper Company, Cloquet, Minn., writes that his presence at the reunion seems very doubtful, as he starts labor negotiations the last of May. "Please give everyone my warmest regards," he concludes. — Gus Frigon, VI, assistant general manager, Canadian Broadcasting Corporation, Montreal, has a son doing postgraduate work in mechanical engineering at the Institute this year. The younger Frigon, Raymond Augustin, received his bachelor's degree last June at l'Ecole Polytechnique in Montreal, where his dad formerly was dean. From John Hugelmann's daughter in Hartford, we learn that John, I, is at Masonic Home Hospital, Wallingford, Conn., where he has been a patient for the past three years. Course I men and others who remember John can drop him a line there. Through fraternity channels we learn that Roy Van Alstine, I, consulting engineer with office at Long Beach, Calif., spent most of last summer in Alaska and the Canadian Rockies. He took the Yukon River trip upstream to Dawson and Whitehorse, returning via Skagway. He reports it to be a most beautiful and interesting country, with its natural resources hardly touched. — We asked Bill West, II, when we sent out class dues bills, how it happened he was now listed at Ephraim, Wis., when for years we had addressed him at the Great Lakes Forge Company in Chicago, and he replied: "No current activities worth mentioning. I've just retired, that's all." Ho, hum!

Then there are the new address changes from the Alumni Office, with the usual note to each to "Write to Dennie": Herb Angell, IV, 9025 Northeast Going Street, Portland, Ore.; Clarence Dow, I, Beach Road, Scarborough, Maine; Bill Fortune, I, 31 Conway Street, Roslindale, Mass.; J. Porter Hart, VI, 420 South Seventh Street, Burbank, Calif.; Herbert

1911 Continued

Joyce, V, 11 Armstrong Street, Jamaica Plain, Mass.; Roger Spencer, II, Box 763X, Amityville, Long Island, N.Y.; Lester Stover, II, 3113 Harriet Avenue, Minneapolis, Minn.

Remember, now, in just about five weeks I hope to see you at the Mayflower Hotel in Plymouth between June 6 and 9, or if not there, surely at M.I.T. on Monday, June 9, when we'll help our fellow Alumni celebrate the silver anniversary of "Tech in Cambridge." — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Worcester, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford, Mass.

## 1913

Three soldiers and a sailor have been promoted: Thomas A. Clark, VI, is now a colonel at Rock Island Arsenal, Ill.; Edwin C. Gere, I, now a lieutenant colonel, still lives in Chicago; Albert M. Jones is now a colonel stationed at Manila; and Guy K. Calhoun, VI, a commander, remains at Laguna Beach, Calif. — Bill Ready, VI, is roaming on the West Coast this winter. He sent your Secretary two post cards, one from Los Angeles and a later one from Palm Springs, Calif. Bill calls Palm Springs "the place for that tired feeling." Bill, old war horse, you are most entitled to indulge that tired feeling. You worked hard to get it.

We have two extra-nice letters. Bill Brewster, II, treasurer and general manager of the Plymouth Cordage Company, North Plymouth, Mass., writes: "I have just received the March Review and want to congratulate you on the extent and interest of the '13 notes. I am awfully sorry to hear about some of the deaths, particularly Al Gibson's, as I knew him best of those who have died.

"I am just back from a trip to Mexico, including two or three days in Cuba, and, to answer your inevitable question, it was not just a vacation jaunt, although I was able to get in a few extra days and did take my wife with me. There was business connected with the trip in all the spots which I touched. We spent two or three days in Cuba and then flew to Yucatan, where we get a lot of henequen for binder twine; it is a place I had never before visited. We spent a day or two at the ruins at Chichen Itzá, which I can heartily recommend to any of our classmates who get down that way. They are very interesting.

"We flew from Yucatan to Vera Cruz and then went on the train to Mexico City to give Mrs. Brewster the benefit of that trip, which is a very beautiful one. People in Mexico are feeling rather optimistic as to the future; they think the turn will be back to the right and more conservative conditions will prevail. Certainly I have never seen anywhere as much building, mostly residential, as I saw in Mexico City. . . ."

George Richter, X, wrote: "After twenty years of continuous service with Brown Company in Berlin, N.H., I took a deep breath, severed the umbilical cord, shouldered my knapsack, and trekked from the forests to the bright

lights of the cities in search of new adventures and (hopefully) new worlds to conquer. For three months I enjoyed an office at Technology, where I carried out some special investigations for the National Defense Research Committee, of which I am a member, and where I sharpened wits with Warren K. Lewis '05, William H. McAdams, Thomas K. Sherwood '24, Professors of Chemical Engineering, and others. On New Year's Day I joined Eastman Kodak Company in Rochester, N.Y.

"Almost all my professional life has been devoted to research and development in cellulose — the rayons, plastics, and the like — and my new efforts are directed to the extension of those studies. I doubt that anyone in our Class has had more fun and excitement in the pursuit of his endeavors. The search is endless, and each advance unfolds a host of new possibilities. I am now settled in Rochester and will be happy to hear from the boys who travel through this part of the country. The town is full of Technology men, and a fine lot they are." — FREDERICK D. MURDOCK, *Secretary*, Murdock Webbing Company, Box 784, Pawtucket, R.I.

## 1914

Twenty-eight '14 men met in New York at the Technology Club on the evening of March 5 for our annual dinner. As Charlie Fiske was in charge, it is needless to say that it was a grand occasion. The fact that the meeting had been postponed a month because of conflict with the annual dinner of the Technology Club of New York prevented our President, Buck Dorrance, and our Philadelphia commuter, George Whitwell, from attending. Both had already made earlier plans to be in the South. Tom Richey, who is a captain in charge of ship construction at the Brooklyn Navy Yard, described some of the interesting aspects of his work. Dinny Chatfield told of the tremendous expansion at the United Aircraft and Transport Corporation plant at Hartford. Others present commented on their activities, and Lester Forbes told of his experiences in Paris in the months following the outbreak of war. Coming into New York from out-of-town to attend the dinner were Walt Keith from Akron, Bert Hadley from Bridgeport, Chatfield and Art Peaslee from Hartford, Ralph Perry from Torrington, and your Secretary from Cambridge. New York classmates present were Affel, Barratt, Crankshaw, Ross Dickson, Duffield, Faunce, Fiske, Forbes, Fox, Gardner, O. C. Hall, Hines, McMenimen, Mayo, Mudge, Ober, Perley, Richey, Simpson, Spitz, Townend, and Warren.

A smoker was held at the Institute for the Alumni of greater Boston on the evening of February 27. While there was no attempt made to organize class groups, your Secretary noted that among those present were Crocker, Eberhard (whose son, Walter, Jr., '42 was elected to one of the Institute's undergraduate honorary societies), Mann, and Tallman.

One of the nice things about class dinners and other activities, in addition to

the events themselves, is that they stimulate a little correspondence and thereby provide items for these columns. How else would we have heard that Ernest Kerr, Vice-President of the What Cheer Mutual Fire Insurance Company, was away on an extended trip, that Roy Parsell's wife would not let him come down from New Haven, that Gardner Derry, Vice-President of the B. F. Sturtevant Company, was ill with influenza (now recovered), or that Vernon Tallman was in the midst of conducting a rate case before a public utility commission?

Honors go to Bob Townend, technical director of William Zinsser and Company of New York, manufacturers of shellac products. Bob has just been elected to the New York Academy of Sciences. — Honored in his own community by a special article in the Camden, N.J., *Courier* of February 17 was our President, Buck Dorrance. We all know Buck so well that it is unnecessary to repeat here the story of his life as given in the article, but it certainly warmed your Secretary's heart to see in a special box this comment: "Best slants on any personality come from a man's friends, acquaintances. Check on Dorrance's reveals one salient characteristic; 'Buck's' word is his bond. What he says, he means, or else he keeps quiet."

George Whitwell's trip to Florida did him a world of good, and when he was in Cambridge on March 12 for the Corporation and Alumni Fund Committee meetings, he appeared in fine shape. George says an eight months' illness is just about seven months and twenty-nine days too long.

*Life* of March 10 carried pictures of crowded conditions in the capital city. In one was none other than our classmate Paul Revere Smith, a lieutenant commander in the United States Naval Reserve, who had been called to active duty from his post in New York, where he had been assistant to the general manager of the American Pioneer Line. Smith's picture showed him in a naval operations office.

Walter G. Hauser, who has been in Larchmont, N.Y., for a number of years, is now located in New Jersey near Fort Dix, where he is actively engaged in quite a sizable real estate venture involving the operation of a number of stores and gas stations. — Gilbert Wagner reports that his most intense current activity in Stamford, Conn., where he has been in the electrical business for many years, is that of working on a new invention which is now in the model stage and which he believes is exceptionally promising. We also learn from Wagner that Bert Hale is now located at the United Aircraft Corporation plant in Hartford, Conn.

Frank Ahern is still up to his neck in safety work in the Department of the Interior. In addition to being chief of the safety section, he has just been appointed by Secretary Ickes to the chairmanship of a committee to prepare and co-ordinate a program of health and safety for the department. Also, just as a side line, Frank arranged for a course on fire-protection



## 1914 Continued

engineering to be given at George Washington University. This is one of the refresher courses for engineers in connection with the engineering defense training program.

Remember, Alumni Day is June 9. Plan to be present then and at the predinner class meeting to be held at the Hotel Statler. — H. B. RICHMOND, *Secretary*, General Radio Company, 30 State Street, Cambridge, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York, N.Y.

## 1915

Instead of the usual class dinner, '15 gave a movie party for the wives and families of classmates in the metropolitan Boston area on March 15 at Walker Memorial. We wanted the families to have the treat of seeing their men in the movies. Don't take my word for it, but the consensus was that the party was a huge success. A total attendance of seventy-three was the vastest audience we have ever had at a Boston class party. Pirate George Rooney, having found the voice he lost at Oyster Harbors, as master of ceremonies managed to outtalk the hecklers, and with a flourish he introduced Herbert Swift of New London, N.H., our honorable producer, photographer, exhibitor, and narrator, who gave us a complete movie show from the twentieth reunion at Saybrook in 1935 to the twenty-fifth reunion at Oyster Harbors in 1940, including pictures he had taken of Boston and New York class dinners in between times. Speed's comments were typical of his humor, and I think that the deletions by the censor caused as much mirth among the ladies as the original artistic studies did among our classmates. Music was furnished by Henry Sheils's children: Marjorie played the violin, Teresa, the piano, and William, the cornet. The concert was amplified by Johnnie O'Brien's daughters, Loretta and Alice, at the piano. By popular acclaim Bert Adams was called upon to perform, and he mystified us with two of his always delightful tricks. Refreshments for both young and old closed a pleasant evening. It must be that as we approach this fifty-year-old stage, we are beginning to mellow, for a number of the boys would like to plan parties in their houses for classmates and their wives.

A vote of thanks from the Class goes to the ladies' committee for the nice work they did in making our guests comfortable and happy for the evening. The committee was headed by Mrs. Barbara Thomas, who was assisted by Mesdames Dalton, Howlett, Rooney, Scully, Sheils, Young, and Miss Virginia Thomas. Guests of the Class were Barbara and Virginia Thomas, Mr. and Mrs. Albert H. Wechsler '21, Miss Frances Clarke, and Mr. and Mrs. Charles M. Davidson. The following families attended: Mr. and Mrs. Bert Adams and two daughters, Mr. and Mrs. William H. Brackett, Frank R. Foster, Osborn R. Freeman, Mr. and Mrs. Alfred E. B. Hall and daughter, Mr. and Mrs. Abraham Hamburg and niece, Mr. and Mrs. R. Loring

Hayward and son, Mr. and Mrs. Seward Highley and two daughters, Mr. and Mrs. Clarence W. Howlett, Mr. and Mrs. Benjamin Hurvitz and two sons, Azel W. Mack, Mr. and Mrs. George J. Moulton, Mr. and Mrs. Francis E. Murphy and daughter and son, Archibald S. Morrison, Mr. and Mrs. John H. O'Brien and two daughters, Mr. and Mrs. George T. Rooney, Mr. and Mrs. Chester M. Runels and two daughters, Mr. and Mrs. Henry C. Sheils and three children, Edward L. Sullivan and sister, Mr. and Mrs. Herbert D. Swift, Mr. and Mrs. Frederic E. Waters, Herbert H. Whitcomb, Mr. and Mrs. Max I. Woythaler, Mr. and Mrs. Louis H. Young and son, Mrs. Waldo F. Pike and daughter, and Mrs. Frank P. Scully and son.

We hope to have a similar party in New York and one in Philadelphia as soon as it can be conveniently arranged. Ernest M. Loveland has a new address at 125 South Main Street, North Brookfield, Mass., in which town he is works manager of McLaurin Jones Company, manufacturers of paper products. Ernie writes that he has been working hard in his new position, and he says: "My boy, Jack '42, broke the M.I.T. record for 200-yard, breast-stroke swimming against Worcester Tech, but was in the infirmary with a cold and didn't get out in time for the New England Intercollegiate. His thirteen-year-old sister swam on the Worcester Swimming Association relay team in an exhibition at the Massachusetts State College recently, when her team broke the New England record for women. She then went with the team to Buffalo for the Amateur Athletic Union nationals. She and an older girl were fighting it out in the 100-yard free style to determine which one would be the fourth girl on the relay team for later races." Our congratulations and best wishes to Ernie on his new job and our welcome to him in joining the New England coterie of classmates.

There will be the annual class cocktail party at the Hotel Statler, Boston, on Monday, June 9 (Alumni Day) from 4 to 7 P.M. All classmates, their families, and friends are cordially invited. There is no charge of any kind. Everyone always has a good time, and it's a splendid chance to renew and relive old friendships. — I still feel like "helpless Azel," so what d'ya say for some news about yourselves for the class notes? — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline, Mass.

## 1916

The news at this writing is that our twenty-fifth reunion is going to be the biggest and best reunion we have ever had. These notes are being written on March 24, at which time we have seventy classmates promising to attend. Seventy-two attended our twentieth reunion, so we expect well over one hundred at our twenty-fifth. The Oyster Harbors Club offers the best facilities we have ever had at our disposal for our get-together preceding the Cambridge festivities. Bill Farthing has already offered a Class

President's Cup for the best golfer. There will be other fitting and appropriate prizes for the occasion. Following is a list of classmates who are going to be on hand. If you do not find your old buddies' names here, write a letter and do what you can to boost the attendance: Walter S. Aiken, Joseph W. Barker, William J. Barrett, Edward H. Barry, Steven R. Berke, Thomas A. Berrigan, Walter D. Binger, Wallace Blanchard, Thomas D'A. Brophy, Raymond G. Brown, Willard C. Brown, James A. Burbank, Robert S. Burnap, Arthur P. Caldwell, Jr., Jasper B. Carr, Frank D. Chandler, Howard P. Claussen, Caruthers A. Coleman, Robert A. Crosby, Theron S. Curtis, Ralph V. Davies, Harold F. Dodge, William W. Drummey, Paul H. Duff, Samuel M. Ellsworth, William J. Farthing, Ralph A. Fletcher, Francis C. Foote, Hovey T. Freeman, John R. Freeman, Jr., Allen L. Giles, Percival P. Gooding, John Gore, W. Lee Graves, Harold P. Gray, Howard W. Green, Carl T. Guething, Frank B. Hastie, Frank S. Hubbard, John B. Ingle, Edward S. Jenkins, Emory L. Kemp, William B. Leach, Jr., Charles W. Loomis, Charles S. Makepeace, Charles J. McCarthy, Herbert Mendelson, Joseph V. Meigs, Arvin Page, Edmund S. Parsons, David L. Patten, George H. Petit, Oden B. Pyle, Jr., Charles S. Reed, John D. Robertson, Richard S. Rowlett, Harold Russell, Henry E. Schabacker, August G. Schaefer, Henry B. Shepard, Francis E. Stern, George Sutherland, Hyman B. Ullian, Edward A. Weissbach, Marshall S. Wellington, Harold O. Whitney, Edward H. Williams, Robert E. Wilson, Donald E. Woodbridge, and John E. Woods.

The following is from J. C. Merritt, who is with the Canadian Ohio Brass Company, Ltd., in Montreal, Canada: "Not having attended any previous '16 reunions I had been anticipating our twenty-fifth with a great deal of pleasure; but with Canada, as part of the British Empire, at war, it is out of the question to spend money for pleasure purposes outside the country. Not that we are desirous of spending less money in the United States. That is not the case. What is happening is that we are changing the character of our purchases from luxury items, which include pleasure travel, to planes, guns, and other materials essential to the winning of the war. Our supply of precious United States dollars has to be applied to the importation of material for war purposes and for the continued functioning of Canadian industry; all other expenditures must give way. Naturally there are ways to circumvent the regulations, but it would hardly be cricket to do so. Therefore I have regretfully decided to pass up our twenty-fifth, but I certainly will make the thirtieth. Here's hoping the twenty-fifth will be tops in every way, as I am sure it will be."

Tom Berrigan has taken on the job of chairman of the athletic and sports events for the reunion. Steve Whitney is handling arrangements for our headquarters hotel in Boston. Ralph Fletcher is rounding up the Boston contingent. Bob Wilson

## 1916 Continued

is handling the details of arrangements in connection with the class memorial. Walt Binger is compiling the class history. Those of you who have not sent in your brief autobiography to Walt should do so at once. His address is Municipal Building, New York City.

Each member of the Class should consider himself a committee of one, not only to put in an appearance on June 6, 7, and 8 at the Oyster Harbors Club and on June 9 at the Institute but to try to bring along another classmate.

Headquarters on Monday, June 9, at the Institute will be Room 1-110, the testing materials laboratory, which has been set aside and designated as the meeting place for the Class prior to the luncheon. — JAMES A. BURBANK, *Secretary*, The Travelers Insurance Company, Hartford, Conn. STEVEN R. BERKE, *Associate Secretary*, Coleman Brothers Corporation, 245 State Street, Boston, Mass.

## 1917

A communication, having passed the censorship of H. E. Lobdell, arrived from Ras Senter. We are under warning from official quarters to treat this communication as privileged and to make no reference to jungle gardens, Mardi gras, and so on. The document is postmarked Lobdell, La., and the assumption is that the gentleman with philatelic interests has been touring the area under genial and expert guidance. Although the itinerary was evidently through a wide southwestern area, no similar piece of philately has arrived from the home of Dizzy Dean.

Enos Curtin, who is still associated with Hemphill, Noyes, and Company in New York, is giving much of his time and a major portion of his best thought and attention to the American Field Service. He is one of the three members of the executive committee and is doing his utmost to obtain increased support. Twenty-five ambulances have been delivered to Greece from Bombay, and when we last heard, sixteen volunteers had gone to Cairo via Cape Town with their expenses paid by the American Field Service. The service is now seeking further funds for ambulances and motor equipment for Greece; ambulances for the Union of South Africa; surgical cars for the American Ambulance, Great Britain; and transportation expenses for volunteers to Africa.

Bob Moulton, as technical secretary of the National Fire Protection Association, is distributing an extremely interesting new book, *Fire Defense*, telling all about facilities, policies, methods, planning, and so on for fire protection. The book includes discussions of sabotage and other matters relating to the current emergency. Bob writes that he ran into Mehaffey and McDaniel in Washington early in March and that they were having "a swell time running the new Navy model basin."

A clipping, forwarded by Dennie '11, from the March 10 Worcester, Mass., *Gazette*, states: "Lieut. Col. Edwin E. Aldrin . . . delegated to reopen the Newark Airport more than a month ago

is on the job and bids fair to make the field an important aviation link in the national defense program. . . .

"Lieutenant-Colonel Aldrin last month was offered the managership of the airport with full control by Mayor Ellenstein. . . . Since the retirement of Lieut. Richard Aldworth, the airport was without a manager. It has been closed since May.

"Aldrin, who is special consultant to the Civil Aeronautics Administration on planning airports and pilot training, is well acquainted with Newark Airport. He was formerly aviation manager for Standard Oil Co. of New Jersey and had supervision of the company's hangar and planes at the airport. . . ."

Rad Stevens showed up recently. He phoned to say hello, but the Secretary was out of town. — Ray Blanchard and Richard Hardwick have been made directors of the First National Bank of Malden, Mass. — We understand that Art Miller was in Boston for a hurried visit in March. He came to get away from the Alabama sunshine.

Hal Gray '16 sent the following clipping from a Syracuse, N.Y., paper: "The appointment of John H. Holton . . . as general manufacturing manager for Carrier corporation was announced by Carl A. Ostling, production vice-president. . . . Holton served with the U.S. chemical warfare service during the world war and for eight years after the war was engaged in development work with a firm of chemical engineers and a group of textile mills.

"He joined the Carrier organization in 1927 as director of research for one of the present corporation's predecessor companies. After the formation of Carrier corporation in 1931, he served successively as director of operations for Carrier Research corporation, head of production design, assistant chief engineer, service and construction manager and manager of the eastern contracts division.

"Holton resigned in December, 1936, to become works manager of the Pulp Products Co., Inc., of Massillon, O., but returned to Carrier in June, 1939, as assistant to the production vice-president and was placed in charge of quality control. He held this position until his appointment as general manufacturing manager. . . ."

Frank Peacock has rejoined his old friends, the Harza Engineering Company, consulting engineers of 205 West Wacker Drive, Chicago. He will be employed for the time being on the power development of the St. Lawrence Waterway at Massena. You will recall that previously he had been with the S. Morgan Smith Company, where he came in contact with their interesting work with the windmill that utilizes the latest improvements in aeronautical engineering. Frank relays a newspaper account of the attempt of Dick Whitney's eighteen-year-old daughter, with another girl, to negotiate the Chicago Harbor in a dinghy. Both had a nice cold bath but were quickly rescued and are none the worse for the experience. — On receiving a notice from the Alumni

Office that Henry E. Strout, formerly of the West Coast, now lives at 21 Sheffield Road, Winchester, your Secretary telephoned. He was referred to Henry's business office, which he found a comparatively few yards away and plainly visible from his own. In fact Tubby came to the window and wigwagged a signal. He had been my neighbor for several months, and the luncheon that followed the discovery was spiked with mutual apologies and recriminations. Tubby came east to reorganize the New England representation of the California Packing Sales Company and has already made excellent strides in strengthening northeastern sales. — RAYMOND STEVENS, *Secretary*, 30 Charles River Road, Cambridge, Mass. PHILIP E. HULBURD, *Assistant Secretary*, Phillips Exeter Academy, Exeter, N. H.

## 1918

John A. Williams, general manager of the Curtiss-Wright Corporation, spoke on "Making Aircraft in Columbus" at a meeting of the Lions Club of Columbus, Ohio. Some of the publicity ran as follows: "Every man, woman, and child in this city has or will become air-minded, and within a few short months one of the largest airplane manufacturers of all the world will be producing thousands of aircraft under the Curtiss-Wright trademark. The general manager of this great industry that will employ some twelve thousand people is a very remarkable gentleman. Mr. Williams, known to his friends as 'Al', is oneswell guy. A graduate of Massachusetts Institute of Technology in 1918, in 1921 he became associated with Curtiss-Wright. Since that time he has been actively engaged in the manufacturing and experimental departments and, up until a few months ago, he was assistant general manager of the Buffalo Plant of Curtiss-Wright."

In January, I had to make a business trip to Essex, Conn., with my boss, and while eating lunch in a very small, unobtrusive place, about the only one open in the little town at this time of year, whom should I run into but Herb Polleys and his wife, who seemed to be on the same kind of a trip that I was. You meet your friends in the most unexpected places at the most unexpected times.

From the New York *Times* of February 17 comes the following: "Stephen M. Foster has been appointed economic adviser to the New York Life Insurance Company, according to an announcement by George L. Harrison, President. For ten years Mr. Foster has been economist in the investment department of the City Bank Farmers Trust Company, specializing in factors affecting money markets and business activity. He joined the staff of the City Bank Farmers Trust Company in 1931 and since that time has become widely known as a writer and a speaker on economic subjects. He is a member of the faculty of Columbia University and conducts regular courses at the American Institute of Banking on the interpretation of financial problems."

The following appeared in the Newark, N.J., *News* of February 19: "Elliott Har-



1918 Continued

rington has been named sales manager of the General Electric air conditioning and commercial refrigeration department with headquarters at Bloomfield. . . . Harrington has been 22 years with the company. Connected with its air conditioning and automatic heating activities from their inception, his early assignments on the development of an automatic oil furnace led directly to the formation of the department, in which he has served in various engineering and sales capacities. Under the new arrangement he will supervise distribution and policy. Three separate sales sections will be under his supervision. . . .

From the Boston *Herald* I got more news about Stanley R. Cummings, whose death I told you about in the April notes. Stan was married to Gretchen Horst in 1921 and became a teacher in the engineering department of Oregon State College, Corvallis, Ore. Later he taught at Lafayette College, Easton, Pa. He was research mechanical and electrical engineer for the Hoover Company, North Canton, Ohio, from 1923 to January, 1940. At the time of his death he was chief of laboratories at the Sunbeam Electrical Manufacturing Company, Evansville, Ind. — GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

## 1919

George McCreery wrote from Boston, where he is with McCreery and Theriault, building construction, 131 Clarendon Street. George told about the midyear alumni gathering for Boston and vicinity at Walker Memorial on the evening of February 27. The following members of our Class attended: Art Blake, Hym Selya, Carl Svenson, Chester Stewart, and Eugene Mirabelli. George wrote further: "John Coldwell was in town recently, and we spent a very pleasant evening together in the Balinese room of the Somerset Hotel along with several other Technology men and their wives. Jack is doing well operating the Leno Elastic Web Company in Fall River. This company, as you know, manufactures two-way stretch articles. Scott Keith is still with Metcalf and Eddy and is doing very well. James Holt has been given a leave of absence from the Institute teaching staff, and he is co-operating with the firm of Fay, Spofford and Thorndike for the remainder of the year.

"We of the class-agent brigade have recently received a batch of mail from H. B. Kane '24, director of the Alumni Fund. The fund has shown a very good beginning for one year's operation. As for our Class, 22 per cent gave an average of \$8.10 per capita. Our per capita is not bad, though it could be improved, and our percentage most certainly could stand the needle. I have been thinking over the future in connection with our class-agent letters and have in mind obtaining a few assistants. The idea is to get more personal notes on the letters. I will still originate the correspondence, but if it is possible to obtain a few assistant agents in different geographical locations, a

personal note added by said agents might be of considerable help in obtaining a larger return. What is your reaction?

"I am busy as usual and know I should have corresponded before now, but the run of things in general has kept me going at top speed. Yours for bigger and better class notes and larger remunerations to the Alumni Fund. Don't forget June 9, Alumni Day, when we all will see you here in Boston."

George enclosed a clipping from the February 28 issue of the Worcester evening *Gazette*. This was also received from Dennie '11. It states that Roderic L. Bent was made a new director of the Chamber of Commerce of Gardner, Mass.

J. W. Orcutt writes from Nansemond Ordnance Depot, Portsmouth, Va., where he is stationed, that he is now a lieutenant colonel in the regular Army. — Carl G. Polson writes as follows: "I am married and have two sons, seventeen and twelve years old, and am living at 82 Vesey Street, Brockton, Mass. I am assistant superintendent of distribution with the Brockton Edison Company, and by June, I will have rounded out twenty-five years of service with this company. My hobbies are bowling in the winter and golf in the summer."

Your Secretary had a very nice letter from Ev Doten, 4370 Grayton, Detroit, Mich., with an enclosure regarding Charlie Chayne. Ev writes, "As you know, Charlie Chayne has gone a long way in the automotive business and will go still further. As for myself, nothing of importance has happened. I have been with Chrysler Corporation for some time now, and things are pretty busy here. I hope to get east this summer and trust we can get together for lunch. Best to all '19 men." The clipping from the Detroit *Free Press* of Tuesday, March 18, follows: "Chayne Has Dual Job. . . . Acting in the dual capacity of chief engineer of the Buick Division of General Motors and chief engineer of the Buick Aviation Engine Division, Charles A. Chayne spent Monday in Hartford, Conn., discussing designs and processing developments with Pratt & Whitney technicians in connection with the Buick national defense project which will soon be under way in the new plant Buick is erecting in Chicago. A large force of Buick engineering experts is now busily completing the layout for the new plant, Chayne said."

Jack Meader has written an interesting report on "The Petroleum Industry" in the spring issue of *Index*, a publication of the New York Trust Company. The New York *World-Telegram* of Wednesday, March 19, quoted at some length from this article.

Frederick W. Barney is district manager of the Faultless Caster Corporation, 666 Lake Shore Drive, Chicago, Ill. Lawrence B. Cahill has moved from Miami, Fla., to Roberts Apartments, 1641 North Mariposa Avenue, Hollywood, Calif. Leo A. Kelley is at 3438 87th Street, Jackson Heights, L.I., N.Y. Gustave Levy has moved from Weehawken, N.J., to 135 Milton Place, South Orange, N.J.

Mrs. Lincoln Thompson is at Mountain View Terrace, West Cheshire, Conn.

The slate of nominees for the 1941 election of officers and representatives of the Alumni Association includes Alfred W. Hough, who is a member of the National Nominating Committee of the Alumni Association, and Edward E. Scofield, who is with the Washington Water Power Company, Spokane, Wash. Scofield is running for representative of District 10. We note that Louis J. Grayson, Al F. O'Donnell, and Merritt P. Smith are still active in the Washington Society of the M.I.T. We should like to hear from some of this Washington group. — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 420 Lexington Avenue, New York, N.Y. GEORGE W. MCCREERY, *Assistant Secretary*, 131 Clarendon Street, Boston, Mass.

## 1921

Come to the reunion! Decide now that this year of all years you will come back next month to join the gang. Take advantage of a major opportunity to see old buddies, to live with them again — but this time in an ideal vacation atmosphere far from the world's turmoil.

Here are the specifications for our Tremendous Twentieth: *place*: the Griswold Hotel on Eastern Point, New London, Conn., convenient to Boston, New York, and all the rest of the United States and other desirable parts of the world; *dates*: starting on Friday evening, June 6, continuing through June 7 and 8, and concluding with a trip to Cambridge on June 9 for those who wish to attend Alumni Day at the Institute; *program*: indoor and outdoor activities for all, combined to provide a rare treat in an ideal setting for continuing old friendships.

Get out that directory of the Class which was sent to you. Appoint yourself the official caller-upper for your territory and phone the fellows near you to make up a party to travel to New London en masse. Look up five others of your Course, your fraternity, or your clubs and urge them to meet you at the Griswold. And while you've got that data from Ray's letter, please complete the questionnaire and return it at once. Write to Ray right away — and say you'll come to the reunion.

Just as we assemble these notes in March, a welcome message comes from Harry P. Field, VI, electric sales manager of the Hawaiian Electric Company, Ltd., Honolulu, T.H. Harry says he will certainly be among those present at the reunion and at Alumni Day, which fact seems to clinch for '21 and Course VI the honors for the long-distance award. Here is an open challenge to Tech men on the West Coast, in Canada, Central and South America, and other distant spots to get busy!

In the many gratifying replies to Ray's questionnaire received to date every Course is represented among those who promise to be present. There are ties in first and second places for the largest number now planning to attend. Courses

## 1921 Continued

X and X-A are tied with Course XV for first place, and Course II is tied with Courses VI and VI-A for second place, with Course IX-B not far behind. Over half of those who will attend say they plan to go to Cambridge for Alumni Day. Affirmative replies have come from men in twenty-six states and the District of Columbia, besides Harry Field's long shot from Hawaii. There are, be it said, five who will make the trip from California, Washington, and Oregon. The largest numbers of responses have come from Massachusetts, New York, and New Jersey.

The answers received at this early date show definitely that the attendance at our Tremendous Twentieth will exceed that of any of our previous reunions. Many men have gone about arousing neighbors to join the trek. The latest are Bill Knoepke, VI, Ward Motor Vehicle Company, Mount Vernon, N.Y.; George Chutter, VI-A, of the Hevi Duty Electric Company, who resides in Glen Rock, N.J.; Trev Peirce, XV, Peirce-Phelps, Inc., Philadelphia, Pa.; and Johnny Crowley, II, Equipment Engineering Company, New Haven, Conn. Bob Miller, XV, is expected to bring his movie camera to record for whom it may concern the real color of the proceedings.

Among the replies are further inquiries about the airplane landing field and yacht anchorage facilities available at the Griswold, which bespeaks a certain air of affluence and a determination to make this twentieth anniversary long remembered. Other inquiries concern arrangements for the ladies. Although the reunion itself is stag, as voted by the Class for all reunions prior to the twenty-fifth, the committee is checking into the matter of accommodations and a possible program for the ladies.

If you have any questions or suggestions, send them to Ray St. Laurent at the address below and be sure to enclose your completed questionnaire so that adequate plans can be completed to handle all the reservations. But send in the questionnaire whether or not you now plan to attend.

Other news of the month has been somewhat curtailed in order to emphasize this last-minute appeal to all of you to participate in the reunion. A report on the Alumni Fund has been sent to all Alumni. Anyone who has forgotten to send his contribution may yet be able to get in under the wire.

Annual ballots of the Alumni Association contain the name of Wint Dean, XV, Secretary of Nicols, Dean and Gregg, St. Paul, Minn., as a candidate for membership on the National Nominating Committee from his district. Wint is an honorary secretary of the Institute and president of the Technology Association of Minnesota.

Our Class claims top honors for attendance at a regional meeting of forty members of the M.I.T. Club of Northern New Jersey who reside in or near Ridgewood, with four present. The Class of '17's belated claim of four is being studied by the local authorities. Our group con-

sisted of Max Burckett, VI, George Chutter, VI-A, Sumner Hayward, X, and Cac Clarke, VI.

If you want to keep your class directory up to date, clip out the following new addresses as well as those listed in last month's issue of *The Review* and attach them to your directory. The address changes of the last month include: Harry Cole, I, Post Office Box 735, Diablo Heights, Canal Zone; Willard A. Emery, II, Worthington Pump and Machinery Corporation, Holyoke, Mass.; Victor O. Homerberg, III, Room 6-202, M.I.T., Cambridge, Mass.; William F. Kennedy, II, 21 Ardmore Road, Scarsdale, N.Y.; Francisco L. Lazo, I, Avenue Madero No. 1, Desp. 500, 600, Mexico D.F., Mexico; and Robert R. Thurston, X, Ridge Road, Chappaqua, N.Y.

There is just a month to go before our twentieth anniversary celebration. Don't miss it. Put the dates down now and act at once to get your friends to be there so you can enjoy the party with them. Come to the reunion! What do you say? Well, write Ray right away! — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Paper Manufacturing Company, Manchester, Conn. CAROLE A. CLARKE, *Assistant Secretary*, International Telephone Development Company, Inc., 137 Varick Street, New York, N.Y.

## 1922

Although we still have a year to go before our twentieth reunion, we are looking forward to a larger attendance of our Class on Alumni Day, June 9, than we had last year.

Those who attended the reunion last year will recall that the '22 suite at the Hotel Kenmore provided a very convenient meeting place at which to gain strength before setting forth for the various activities. Consequently, starting on Sunday morning, June 8, we will again have our headquarters at the Kenmore, where you may find your friends ready to engage in nostalgic reminiscences or in plotting for the future. All who are planning to return for the general reunion on Monday, the ninth, will find it well worth while to come back a day earlier. For those who feel so disposed, there will be golf at one of the local clubs, topped off with an informal supper for everyone on Sunday evening. If you plan to be on hand, please drop a card saying so to the Assistant Secretary.

Clate Grover has gone off on one of his periodic tours to the West Coast on behalf of his company, Whitehead Metal Products.

William W. K. Freeman has set an example in his home city of Salem, Mass., an example which could stand copying in many other communities. According to the *Salem News* of March 6, a group of public-minded citizens have formed the Public School Association, Inc., to awaken an intelligent interest on the part of the general public in the operation of the Salem school system. The activities of this association consist in keeping in touch with the work of the school committee and in endorsing candidates for

election to the school committee after investigation of their records. The association seeks to provide a method by which voters may choose their school committee members with full knowledge of the candidates before them and in this way stop the infiltration of political pressure on the appointment of teachers. Freeman, charter member of the association, has been elected its first president. Those of the Class who might be interested in developing such an organization in their own communities may reach Freeman at either his home, 31 Warren Street, Salem, Mass., or his business, Mutual Boiler Insurance Company, Boston, Mass.

Ray Burrus, who is now with Ebasco Services, Inc., 2 Rector Street, New York City, has kindly forwarded an interesting letter from H. Richard Aaron, who is one of the partners of Frankel and Aaron, at 6-C D'Almeida Street, Singapore, S.S. We quote from Aaron's letter: "The last time I was in the States was in 1937. I had every intention of going again last summer, as I wanted to put my children in school in California and leave them there. I have a boy almost eleven and a girl eight. With the war on, however, I changed my plans, as I did not wish to go so far away from the Malay Peninsula."

"My brother-in-law, who is also my partner, has been in San Francisco for almost two years and will be returning here next month. When he gets back, we may go away for a few months, but it is too difficult to plan ahead. I should always prefer to go to the States, but hardly think I will do so under present conditions. My wife and I will probably go to Australia for a holiday. We have a very good air service, and the trip from here to Sydney takes only three days. . . ."

"My work for the last few years has been mainly buying, selling, and handling properties, erecting buildings, and managing our rubber and coconut estate here. There is not much in the way of engineering except in the erection of new buildings." — It is good to hear from our distant classmates, and your Secretary would certainly appreciate it if you would forward to him any letters that you may receive from friends in distant parts.

On a trip to Washington, your Secretary saw Fred Untiedt. Fred is still maintaining his patent law office, wife, and three children, but for the present, royalties from his rubber air-foam patents exceed the dollars produced by the sweat of his brow. The air-foam inventions resulted in Fred's receiving last year one of the Modern Pioneer awards, as we reported at that time. A recent development in Fred's line of tricks is making magic and sleight of hand movements. He has now attained the title of master magician in his hobby. All of the brothers who stop in to see Fred at his Washington office should hold on to their watches until the nature of the magic is more thoroughly understood.

The M.I.T. Club of Northern New Jersey not only seems to exist in the right part of the country but also seems

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to know what to do about it. Members managed to arrange a beer party at the Feigenspan breweries on February 20. Just what happened is not known, though a good number of our Class took advantage of the affair: Joseph S. Baker, Laurence W. Coddington, Richard E. Downing, William J. Grady, Clayton D. Grover, Milton M. Manshel, William H. Mueser, August P. Munning, E. Allan Reinhardt, and Sydney M. Straus, Charles W. Tyson, and Everett W. Vilett.

A newspaper clipping which came to our attention reads as follows: "Albert J. Browning, Assistant Director of the Office of Production Manager, Purchasing Division, is resigning to return to private business. He was said to be chiefly responsible for working out the long range clothing buying program for the Army, which was recently approved by Congress through passage of a special \$175,000,000 appropriation for special clothing stock piles." — CLAYTON D. GROVER, Secretary, Whitehead Metal Products Company, Inc., 303 West Tenth Street, New York, N.Y. C. YARDLEY CHITTICK, Assistant Secretary, 77 Franklin Street, Boston, Mass.

## 1923

This month we take up first the item which has traveled farthest. I recently had a note from José C. Bertino, who said he was making progress with the plan of monthly luncheons for Technology men and hopes eventually to have this lead to a regular Technology club in Buenos Aires. He gives a further report in the following letter to Charles E. Locke '96, Alumni Secretary: "Our first meeting on Friday, December 13, was successful enough to begin with. There were twelve of us, and we certainly enjoyed our lunch together. The second meeting was on Thursday, January 9. We decided to meet on the second Thursday of each month at the American Club, which is located in the heart of the business section of the city. At the last luncheon there were twelve present, including John H. Flynn '05. I think it would be desirable to let it be known that any Tech man reaching Buenos Aires should stop at the American Club, Bartolomeo Mitre 530, for lunch on the second Thursday of the month. They may call for Flynn, R. W. Plummer '26, or H. F. Krantz '28, who, I know, are members of the club; or they may call for me, leaving a message at the Navy Club, Florida 801, phone 31-1011."

Bertino also told me that L. A. Igartua has retired from the Navy and is doing very well as chief engineer in charge of the material and maintenance of the fuel-oil fleet that belongs to the agricultural department in Argentina.

Jack contributes a note from Al Pyle in Jackson Heights, Long Island. Al says: "Rowena and I are the proud parents of a baby girl, Cynthia Munro, who was born on December 20. I'm still at the Sperry Gyroscope Company, preparing instruction books on the many instruments we build. There are several M.I.T. boys here. I see Bill Correale '24 on the streets at times. He lives out here."

K. G. Crompton is president and treasurer of the Shawsheen motor mart in Shawsheen Village, Andover, Mass., and manager of the Sunoco filling station on Broadway, Lawrence. He lives at 20 Smith Street, Lawrence. — EARL D. BROWN is manufacturing superintendent of the Niagara Sprayer and Chemical Company, Middleport, N.Y. — HORATIO L. BOND, Secretary, 457 Washington Street, Braintree, Mass. JOHN M. KECK, Assistant Secretary, 207 Bloomfield Avenue, Bloomfield, N.J.

## 1924

A new danger of skiing, not yet covered by the comic pages, was brought to light this winter by Anatole Gruehr, so our New York correspondent informs us. Appearing at a class luncheon in New York minus his Vandyke and other facial adornments, Anatole explained that he had lost them on a week-end ski trip. The Vandyke had accompanied Anatole for so many years that friends were convinced it was a real one, and they have assumed that week-end companions were able to complete a tonsorial operation which even two Marblehead reunions of the Class were unable to accomplish.

Malcolm MacNaught, we hear from Bill Correale, has recently been appointed sales manager of *Electrical Contracting*. — From Obie Denison '11 comes a newspaper clipping showing Jimmie Doolittle looking on as Jimmie, Jr., signs up as an Army Air Corps flying cadet. Major Doolittle is in charge of Air Corps procurement in the Detroit area.

Recently appointed as assistant attorney general for Massachusetts was Sarkis M. Zartarian, prominent in community affairs in Arlington and at present on active duty as a major with the 241st Coast Artillery in the Boston Harbor defenses. In civil life he holds a civil service rating as motor-vehicle inspector in Massachusetts.

Earl Frazier sent us a novel announcement of the arrival of a new member of the family at a Washington, Pa., hospital late in December. John Earl Frazier, Jr., announced as a 1941 model in the printed prospectus, made his appearance on Christmas Day. — FRANCIS A. BARRETT, General Secretary, 50 Oliver Street, Boston, Mass.

## 1925

Although we are not exactly deluged with information this month, at least we can improve on our record of zero notes in the April issue. First, we have the winter get-together of the Alumni of greater Boston. Besides your Secretary and Assistant Secretary, the following members of our Class were present: Roland Seabury, XV, who is a partner in the firm of Seabury and Cushman, Boston, cotton converters specializing in shoe linings; Westy Westland, district manager of the Marion Steam Shovel Company; Avery Stanton of the Mason-Neilan Regulator Company, pulp and paper equipment division, and our Alumni Fund representative; and Francis Mulcahey, VI, draftsman and inspector of the engineering department of Arlington, Mass. All

but Seabury were present at our fifteenth reunion at Marblehead last June.

There is no need to describe the meeting in detail, as it was covered in the Institute Gazette in the April Review. The talks by President Compton on M.I.T.'s co-operation in national defense and R. H. Markham's comments on Hitler in the Balkans were enjoyed and appreciated by all. Our thanks go to the committee on arrangements.

A notice was received on March 10 that Mr. and Mrs. Walter Eliot Bent announced the marriage of their daughter, Anna Greenleaf, to Frederick William Cunningham on Saturday, March 8, at twelve o'clock noon, in Plymouth, Mass. As we have had no news from Fred since graduation, it was necessary for us to turn to the "Register of Former Students" to check up on his present whereabouts and occupation. We found that he is a physicist of the Arma Corporation in Brooklyn, N.Y. We have written to Fred and may have further information about him and his history in a later issue. Meanwhile the Class extends congratulations and best wishes for a happy married life.

We received an invitation to a dramatization, *Torch of Civilization*, presented by the Lynn section of the American Institute of Electrical Engineers, but we were unable to attend. Burnham Whitehouse, VI, was chairman of the presentation, and his card accompanied the invitation.

A clipping from the Worcester, Mass., *Gazette*, forwarded by Obie Denison '11, discloses that Chimmie Andreson was the toastmaster of the sixth annual dinner of the Order of Ahepa in that city. A group picture in the clipping shows Chimmie flanked by Charles H. Morgan, a professor from Amherst College; and W. A. Bennett, mayor of Worcester. A little delving into the ever-useful "Register of Former Students" revealed that Chimmie is the manager of the Kenmore Products Company of Worcester. We shall have to depend on other sources of information for further details. — HOLLIS F. WARE, General Secretary, 3 Aquavia Road, Medford, Mass. F. LEROY FOSTER, Assistant Secretary, Room 6-202, M.I.T., Cambridge, Mass.

## 1926

Pink Salmon and his committee are feverishly at work on a literary effort calculated to bring all of you back to the reunion on June 7 and 8. Mention of this effort is simply by way of forewarning that you are expected immediately to make up your mind that you are coming to the reunion when you receive the notice.

In a recent letter to Charles E. Locke '96, Arthur Johnson reported good fortune in his work at the Shenandoah-Dives Mine, where he ran into ore with results extremely beneficial to his company. His present address is Boulder, Colo.

Thomas Green, Esq., our blown-in-the-bottle researcher, hove into town the other day on business. He stayed long enough to have luncheon with the Secretary and to report the progress of his career in the laboratories of the Hartford-Empire Company, which has, we believe,

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something to do with the making of glass.

Beyond these items the Secretary is bereft of news this month. He presumes that the boys are holding back on account of the reunion — that they are busy at their desks, their shovels, and their plows, feverishly working and saving to be ready to come. On this hypothesis the Secretary can accept the drought with equanimity and even with anticipation. — JAMES R. KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge, Mass.

## 1927

This month our journey begins in Harmony, Maine, where D. F. Downs has been since graduation. Downs is with the Skowhegan Moccasin Company, is married, and by way of avocation is one of the mainstays of Bangor's radio station WLWZ. An invitation to partake of "plenty good fishing" sounds mighty tempting, especially as these notes are being written en route to New York from Boston, and with the dead line tomorrow.

Milo Williams, a lieutenant commander in the Navy, is now in Washington, D.C., having arrived via California, the Philippines, and other Navy assignments. He is in the design division of the bureau of ships. Williams has four daughters.

Horace Emerson is with the New Hampshire State Highway Department and is located in Concord. As chief of party he specializes in highway bridges throughout the state. Married eleven years ago, the Emersons have two girls.

Don Calderwood wrote from Rochester, where he is in the operations end of the Rochester Gas and Electric Company, that his wife, Lucie S., is a swell cook. Such a statement should be followed with an invitation to "come up and see for yourself," so the general invitation to all readers of this column is hereby declared. At the same time you can see the two Calderwood youngsters — Nancy, aged four, and baby (sex and age not disclosed to your Secretary). Don says that Bob Carr has built a very attractive home in Batavia, N.Y. Dick Cheney has bought a house in the outskirts of San Francisco. Rumor says that Art Connell remains single. He is with E. B. Badger and Sons Company, Boston.

Speaking of real estate (and this train is surely rocking and bouncing it by), Jack Muskin is in the business in Jamaica, Long Island, with the Brunswick Appraisal Corporation. He lives in Far Rockaway. Jack is another who tells us that his wife is doing quite well, thank you, and that they are quite proud of their five-year-old daughter.

Dave Knox, chief engineer of the Bundy Tubing Company, Detroit, is living in Huntington Woods, Royal Oak, Mich. Dave is married but discloses no more about the Knox family. He says that Joe Yates is with Albert Kahn, Inc., in Detroit, doing architectural engineering.

Percy Lovett, Post Office Box 263, Halifax, N.S., is secretary-treasurer of Engineering Service Company, Ltd., where, in

addition to his activity of counting dollars (or pounds), he consults on and designs engineering projects of various kinds. He wrote: "I just want to say I have two fine daughters, Roberta Evelyn, aged two-and-a-half and a real girl, and Nancy Diana, aged six months. I had a letter from Al Nevers recently. His address is Blue Blazes Coal Company, Farmington, Iowa."

Having a daughter himself, your Secretary should be considered unbiased when he calls attention to an interesting bit of statistics just developed before your eyes. Of eleven children of '27 men mentioned above, ten are girls and one is an unknown factor. How come? Jim Lyles keeps the average up with his two. There should be some interesting theories forthcoming on this subject. I'd like to have them.

But to get back to more factual class data — Roy Weller writes from Pullman, Wash., that he is assistant professor of mechanical engineering at Washington State College and is particularly concerned with materials testing and research in stress optics. Weller followed his course at Technology with study and a Ph.D. in physics at Ohio State University.

To those who will attend Alumni Day, notice is hereby given that '27 men will get together in that long twilight hour before dinner for cocktails and windjamming. I talked with your Assistant Secretary, Dike Arnold, recently, and he is the one who decides the time and place. See Dike or call him at his office for particulars. See you on June 9! — RAYMOND F. HIBBERT, *General Secretary*, care of Boots Aircraft Nut Corporation, 247 Park Avenue, New York, N.Y. DWIGHT C. ARNOLD, *Assistant Secretary*, Arnold-Copeland Company, Inc., 222 Summer Street, Boston, Mass.

## 1930

Eight members of our Class attended the midwinter meeting of the greater Boston Alumni at Walker Memorial late in February. They were Jack Latham and Ted Waddell, II, Joe Anastasi, VI, Scotty Scott, VI-A, Mel Blackwood and Tony Savina, X, George Shrigley, XV, and your Secretary. During the buffet dinner and after the program of the evening we had a good chance to talk things over. — Another class baby has been reported. His dad is Johnny Scheuren, XV. The news comes from our genial swimming coach, Jack Jarosh, II, who is working day and night these days at the Institute in connection with research being conducted by Charles S. Draper '26, Professor of Aeronautical Engineering.

A recent engagement is that of Eva Nicolotti of West Roxbury, Mass., to Al Carideo, II. Al is now stationed at Fort Constitution, near Portsmouth, N.H., as an officer in the Coast Artillery. — Hal Spaans, XV, writes to inform us that Bob Foster, VII, and John Parmakian, II, are captains in the same branch of the service at Fort Monroe, Va. Hal recently entertained a group of a dozen M.I.T. graduates at Fort Monroe. — If you have noticed the dearth of '30 news in The

Review of late, drop a line to your Secretary. — PARKER H. STARRATT, *General Secretary*, 1 Bradley Park Drive, Hingham, Mass.

## 1933

We had one of our annual get-togethers here in New York the latter part of February with about fifteen of the boys present. Our usual bull session provided quite some information for this column. I. Harry Summer was with us. He is still with Lerner Shops of Massachusetts, Inc. Harry recently received a deferment from the draft board. He asks us the whereabouts of Jim Vicary. Let's hear from you, Jim.

Frank Koerner is still with the Bucyrus-Erie Company and is now located in New York. He was married last fall. Frank tells us that Norman Harris now lives in Philadelphia. Bill Huston was with us. He is now occupying his time mainly with industrial relations work with the Moral Rearmament group. Bill tells us he saw Clint Backus in San Francisco last summer. Clint was married at Stanford last fall and is now in the frozen-foods business near Seattle.

Collin E. Fink has been doing research work for the Atlantic Refining Company and is now an assistant at Columbia University in the chemical engineering department. He is working toward a doctor's degree. — George Maynard is still with the United Carr Fastener Corporation and has been located in their various offices in both the West and the East during the past few years. He is now in New York.

Hugh MacDonald will stay in the marine department of the Standard Oil Company of New Jersey until he is called to active duty by the Army. He mentioned that Ed Lockman is still with the United States Rubber Company. — H. K. MacKechnie told us that after leaving school he started with Standard Oil, then transferred his efforts to the Mutual Boiler Insurance Company of Boston, and is now with the Globe Indemnity Company in New York, working on boiler and machinery insurance. Mac mentioned having seen Don Fink recently. Don is still editor of *Electronics* and spends considerable time on television. Recently he was awarded a prize for outstanding work in this field during the past five years.

Rodney Chipp is an engineer in the operating department on television of the National Broadcasting Company. He is an associate of Art Hungerford's at N.B.C. — Al Bruce is still with Dun and Bradstreet, Inc. He is happily married and lives in an apartment uptown. He sees Jim Merrill, who lives near by and who is still with the Consolidated Edison Company of New York. — Fritz Sieber works for the Pioneer Engineering and Manufacturing Company, consultants on tools, jigs, and fixtures. When these notes were written in early March, he was at the Wright Aeronautical Corporation in Paterson, N.J., where he has been for nine months on a thirty-day job.

Lincoln Ryder is now working on the layout of the Bermuda Army Air Base for

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Metcalfe and Eddy. Linc expects that any day he may be transferred to Bermuda. He tells us of a few of the other boys: Gus Liljegren is in the production department of the General Electric Company in Lynn; Johnny McAleer is with the Army Engineers at Providence, as is Al Garnell; George Bentley is with the Waltham Watch Company at Waltham, Mass., making airplane instruments. George was married in March.

Ed Rowell still works for the Babcock and Wilcox Company. He tells us he recently saw Bill Moore, who is the father of two youngsters and is with Pan American Petroleum and Transport Company. Wally Bohrer is a biologist for the state of Rhode Island. Al King '32 is an associate professor of chemical engineering at Worcester Polytechnic Institute. — Matt Piskadlo is with the Army Engineers in the Middle West. Paul Petitmermet is in the importing business with his father in New York. Rudy Rosas was recently here from Mexico, where he is in the contracting business and apparently is doing very nicely. Dick Robinson is manufacturing tar products and road surfacing. Fozi Cahaly is with the Boston Department of Public Health.

Leighton Rickards told us of his work at his new job with the Ranger Engineering Corporation in Farmingdale, N.Y., where they are producing air-cooled inline engines for airplanes. Of course, the plant is very busy, and Leight enjoys his work very much. Herb Grundman is also with Ranger, in the engineering department.

Bob Forbes is with the Army Engineers at Providence; Bernard Lucey works for E. B. Badger and Sons, construction engineers in Cambridge; Norman Pressler, International General Electric; Art Hayden, the Goodyear Tire and Rubber Company in Portland, Maine; Roland Glenn, Carbide and Carbon Chemical Corporation in Charleston, W.Va.; Fred Kressman, when last heard from, was with Standard Oil in Louisiana.

Prentiss Lobdell came to New York from the Standard Oil Company of New Jersey, where he is in the process engineering department. Gus Kidde was also formerly with Standard Oil, but is now a captain in the Army. — Hart Cirker is with the DuPont Viscoloid Company in the plastics division. He told us that Dave Treadwell was recently transferred to the DuPont powder plant in Indiana. Dave is living in Louisville, Ky., and has a six-months-old baby girl. Cirker also heard that Leon Keoylos is married and is running a power plant outside of Athens, Greece. This information came before the recent activities in Greece, so we do not know his present whereabouts.

Ed Coe is at Wright Aeronautical, where he is in the metallurgical inspection department in charge of magna flux inspection. Charles Cashman is with E. I. du Pont de Nemours and Company at Leominster, Mass. — We also have seen Joseph Dysart, who is still with Pan American Airways, Inc., in New York. Alanson Gray is a lieutenant in the Signal

Corps at Wright Field, Ohio. We had word that Ivor Morgan is studying for a professional engineer's license for New York State and is still with the Seaboard Machinery Corporation. He was recently appointed an ensign in the Naval Reserves.

Now we'd like to hear from some of you other fellows; won't you drop us a line? — GEORGE HENNING, JR., *General Secretary*, Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn, N.Y.

## 1934

Our bull market for information has reached a boom stage. Several of our classmates have responded to the call to pens, and as a result our column for this month has reached a new pinnacle. We have Q and Q — quantity and quality — and we all owe a vote of appreciation to our friends who have supplied us with such A-1 news.

From far-off Brazil we have received the following letter from that illustrious globe-trotter, Bob Moody: "I decided that it was about time to drop you a line and let you know I hadn't fallen off the ends of the earth. I am a good distance from the States but am still holding on. As a matter of fact I am just about fifteen hundred miles directly east of our illustrious Assistant Class Secretary, Bob Becker, tucked away in the Andes in northern Chile. I sent him a Christmas card and asked him to drop me a line but so far have received no answer.

"I don't believe I've seen you since our fifth reunion down toward the Cape. Much water has certainly gone over the dam since then. You will perhaps remember that I had been ordered back from Europe for re-assignment. Well, I was assigned to the General Motors' plant in Alexandria, Egypt, and was all set to sail when the war broke out. Frankly I am mighty glad not to be over in the Mediterranean region just now, as it might be rather warm in more ways than one. Instead of to Egypt, I was sent to Detroit for six months and then back to New York for a few months. Last August I was ordered here to Brazil, sailing from New York on August 9.

"Since arriving in Brazil I have been doing several types of work. My first job was the general supervision of a major plant re-arrangement, which got under way at the time I arrived. After completing that work I was in charge of all assembly work for a few months. Lately I have been doing plant engineering work. In all jobs I have been reporting directly to the production manager.

"Perhaps you would like to know a bit about the plant here. It is, as are most of General Motors' plants overseas, mainly an assembly plant. We receive all G.M. cars completely disassembled from the States and do all of the assembly work here. We have a capacity of about fifteen units an hour, made up of both cars and trucks. Right now we are building about eighty-five a day. Although our production does not seem large compared with the astronomical figures in the

States, it is still large enough to keep us busy. We also have a commercial body shop where we manufacture our own truck cabs, van bodies, busses, station wagons, and so on. In all, the plant employs about twelve hundred men.

"As far as living is concerned, São Paulo is about tops. Although it perhaps does not have the natural beauty of Rio, it is the most industrial and most North American city in South America. Its population is nearly 1,250,000. There are ultramodern apartments, good shops, and beautiful suburbs. The city is about forty-five miles from the coast and has an altitude of about three thousand feet above sea level. As a result the climate is mild the year round, with little humidity, which is something Rio cannot boast of. Rio is very hot and humid during the summer months of December, January, and February.

"I have discovered that there is quite a group of M.I.T. men in this city — about fifteen in all, I believe. We are all going to try to get together soon for dinner or something. Who knows, we might have a Technology Club of São Paulo one of these days. Unfortunately, I am the only '34 man in town. Three others around our time are Glen Ryan '36, Bill Gibson '38, and Clay do Amaral '40. . . ." — I am sure that Bob will be very glad to hear from any of his old friends; so if any of you want to write to him, he can be reached at General Motors do Brasil S.A., Sao Paulo, Brasil.

Sam Jaroff has contributed some very interesting information as to the location and occupation of some of our contemporaries. His letter reads as follows: "The time has come for all good and true '34 men to come to the aid of their Class. Enough of this dillydallying and wishful thinking, say I. It behooves me to write a word or two about some of our friends who may have been hiding their lights under bushels. Any direct reference to real characters is deliberately intended and done with premeditated good will. Here goes — something:

"George McCaulley, after saying *adios* to Kansas State College, is continuing his teaching career in the civil engineering department of Cornell University. Mac is among the married folks; the wedding bells rang last June. — Obie O'Brien is in Chicago helping to supervise the construction of new plants needed in the national defense program. He is the proud and happy father of a daughter, Mary Eleanor. — Red West has done some moving again. This time he's moved from the Glenn L. Martin Company in Baltimore to the Lockheed Aircraft Company in the Los Angeles area. Red thinks sunny California is the best place to build airplanes and enjoy life.

"Indirect news from abroad tells us that Vin Rother is acting as a civilian consultant to the Royal Engineers on emplacements. I hope he's placed a good gun for bad man Hitler, himself. — The Army is now making use of the services of some of our classmates. Bob Emery is with the engineers at Camp Devens. Art Esslinger is with the Army Ordnance at Aberdeen,

1934 Continued

Md. Johnny Westfall is, I think, with the Field Artillery near Falmouth. Mal Stevens is still ably fulfilling his position as assistant professor of military science at Technology and as a lieutenant in the Reserve Officers' Training Corps.

"John Hrones has a busy schedule at M.I.T. with classes to teach in the Department of Mechanical Engineering and a thesis to complete for a doctor's degree. Jim Eder is in New York handling his control device for steam-heating plants and is doing some research on an air-flow meter for air-conditioning apparatus. — As for myself, this June will see the end of two years of graduate study in city planning at Technology. If my intellectual vigor holds up strongly during the summer, the Institute, upon receipt of one thesis, may reward me with another degree. Then I'll be all set to plan anything from doghouses to Utopias. . . ." — We don't know how Sam gets so much information, but he certainly is doing all right.

The next letter, taken in chronological order, is from Phil Kron. I used to see Phil fairly frequently on my trips to Rochester, but lately my work has kept me close to home and I have missed his shining countenance. Here is what Phil has to say: "I am attaching a letter which I just wrote to Jerry Ansel. . . . Gil Lorenz, with whom I did my thesis, is now a first lieutenant at Wright Field, Dayton, Ohio. He has considerable to do with the making of aerial photographs, and he spends some time in Rochester occasionally. He was married recently. Gil is on active duty but is doing about the same type of work he was doing before, when he was attached to the same department as a civilian.

"Roy Thompson and Ralph Geil are now with the Eastman Kodak Company. Roy is at the camera works doing electrical engineering on projectors, cameras, and other products; Ralph is at Kodak Park, in the same department as I am, supervising construction of machinery and equipment necessary for the manufacture of film. Both boys are still single, but I understand that Ralph has someone who takes up a good deal of his time. Roy and Ralph were at the house recently to see the pictures of the reunion, and they got quite a kick out of them.

"In a roundabout way I learned that Tuffy Emery is on active duty at Fort Devens, Mass. My grapevine is a brother-in-law of Charlie Lucke's who works at Kodak Park here in Rochester. — Rex Murdoch's is among the missing addresses in my file. He was married some time ago, and I have never been able personally to congratulate him because his address is unknown. I did note in the Worcester County Alumni Association notes that he was located either in Groton or Grafton, Mass.

"My own activity hasn't changed a great deal. In my spare time I teach a course in report writing at Mechanics Institute. The course runs for twenty-four weeks, one night a week. Most of my students are men employed in local industries, and it is a genuine pleasure to lead

their discussions. I often think that I am learning more than they are. About a year ago I was appointed clerk of the school board for Greece Central School, District 1. The job involves keeping the cost records, a job for which my experience as an undergraduate at Technology fits me quite well. It is very interesting work and has given me a much better picture of the educational setup in New York State.

"The Army is taking quite a little of my time right now. Unfortunately I was not interested enough during my initial appointment to obtain a certificate of capacity for the next higher grade. I did obtain, however, a re-appointment on an inactive status, and I am working quite hard now to get back into the swing. . . ."

Phil does not do so badly either, when it comes to collecting statistics on the doings of '34 men. Incidentally, if any of you know the whereabouts of Rex Murdoch, you might forward the address to Phil at 27 Parkwood Road, Rochester, N.Y. The following is Phil's letter to Jerry Ansel which he mentioned in his letter: "I have been meaning for some time to write you a word of congratulations for being the corecipient of the Henry Marion Howe Gold Medal of the American Society for Metals. I read about you in the magazine, *Steel*, which also contains your picture.

"Although I do not know a great deal about metals, I do know that your field is becoming increasingly important to industry. It certainly is great to know that some of our classmates are instrumental in the progress that is being made. Again I send congratulations and look forward to seeing you at the tenth reunion of the Class, which is only a short time off. . . ." — Certainly this is an honor of which the Class should be proud. I am sure that every member joins in extending congratulations to Jerry.

A feminine member of our Class again stepped into the spotlight. The following clipping from the *New York Times* gives news on the activities of our illustrious classmate, Elizabeth MacGill: "If you want to see the only woman chief aeronautical engineer in Canada, if not in the world, you will find her at the airplane plant of the Canadian Car and Foundry Company, Ltd., at Fort William, Ont., which is at the western extremity of Lake Superior, largest of the Great Lakes. You will find Elizabeth Muriel Gregory MacGill, Elsie to her friends, either in overalls, a flying outfit or a plain tailored suit. You will find her at a drawing board or out on the field, or again she may be up in the air with one of her test pilots, finding out for herself what her own designed planes are doing. She had enough faith in her own creation, Maple Leaf Trainer II, to go up with the test pilot on its first flight. . . ."

"Her first aeronautics job was with Fairchild Aircraft, Ltd., Montreal, in 1935, where she was an aero-engineer. In midsummer, 1938, she was called in by Canadian Car and Foundry Company, Ltd., to become chief aeronautical engi-

neer. The company is one of six which forms Canadian Associated Aircraft, Ltd., formed to execute war orders for the British Air Ministry. Thus Miss MacGill's work includes designing of military planes, and her Maple Leaf Trainer II was designed to meet specifications of the British Air Ministry.

"The plane she designed was test-flown six months after it began to take form on the designing board. Its features are reported as including excellent visibility, stability and controllability at take-off and on landing, exceptionally short take-off run, low stalling speed of forty-five miles per hour. It is a two-seater single engine biplane, with a wing span of thirty-two feet, length just under twenty-three feet, cruising speed of 101 miles per hour, and cruising range of 346 miles. It is 'fully acrobatic in accordance with British Air Ministry specifications.' . . ."

Rufus Soule recently left his position as chief engineer of Tucker and Rice, Inc., Worcester, Mass., and has been ordered to active duty at the Naval Air Station, Corpus Christi, Texas. At Tucker and Rice he had charge of all refrigeration, air conditioning, and heating undertaken by the concern. He is married and has two children. His work will still be of an executive nature.

In our social column there are a number of announcements which will be of interest to all the members of the Class: Mr. and Mrs. William H. E. Usher of San Francisco have announced the engagement of their daughter, Edith, to Bert Summers. Nice going, Bert. — Mr. and Mrs. Donald A. Raymond of Evanston, Ill., announce the engagement of their daughter, Dorothy, to George Scott Hammonds. Best wishes, Scott. — On February 14, Minor Jameson was married to Rita Anne Donnelly, daughter of Mr. and Mrs. Nicholas A. Donnelly. The couple are living in Washington. Congratulations, Minor.

A card from Balboa Heights in the Canal Zone announces the arrival of one John Peabody Chase, weight seven pounds, two and a half ounces, on November 25. That's right, you guessed it — the proud pappy is Constant W. Chase, Jr. We extend our hands across the sea to Mr. and Mrs. Chase.

May I close by issuing a vote of thanks to all of you who limbered up your pens and forwarded the good word about yourselves and our brethren. It was nice work. And now that we have reached this peak, let us go on to pinnacles anew with news from every one of you. — JOHN G. CALLAN, JR., *General Secretary*, 184 Ames Street, Sharon, Mass. ROBERT C. BECKER, *Assistant Secretary*, Chile Copper Company, Chuquicamata, Chile, S.A.

## 1935

The news column fared a little better this month. Cope MacAllister broke down and wrote a letter — but more of that later. Recently married from the Class was Bill Rothen, who joined forces with Roberta Rose Hardee on February 19. Soon after graduation Bill joined the staff of the Hoffman-LaRoche Company in Nutley, N.J.

Please turn to page I for information on Alumni Day, June 9



Recent additions to the Army from the Class are Lars Sjodahl and George Gales (formerly Glaskaws), both of whom are now at Langley Field, Va., training for the General Headquarters Air Force, Ordnance Battalion. Dick Drury is with the American Maize Products Company in Chicago. Bob Clarke is at Fort Belvoir, Va. A short note about Dick Purcell informs us that he is still in England and would have been back in the States before now had it not been for the slight disagreement over on the other side. He finds life quite exciting at times, gets plenty of food and likker, and so has little to complain about.

This brings us down to Cope MacAllister's letter. Here is his story: "... at that time I was in the general sales office, street lighting department, of the General Electric Company in Schenectady. In June of 1939 I was given charge of the sale of traffic signals and control equipment in the same department. Six months ago the first addition to our family arrived in the person of one Mary Elizabeth, who now weighs seventeen pounds and is a very lively young lady, especially around 6 A.M. Just before Christmas I was transferred quite suddenly to the Lynn, Mass., river works, engineering department, of General Electric to design traffic-control equipment. It's by far the most interesting job I've had so far.

"I am presenting a paper on traffic control at a convention of the International Municipal Signal Engineers in Elizabeth, N.J., and I will also lecture for the second year at the school of street traffic research at Yale University. Since arriving in Lynn I've seen Vin Mooney several times. He is working in the Thomson research laboratory, and from reports around the factory he's been doing some excellent work solving all kinds of special problems." Many thanks for the news, Cope.

The following unfortunate item came to the attention of your Secretary after the other notes of this issue were written, and it is a sad sequel to an announcement given earlier in the column. The news was sent by Paul J. Cardinal '24, to Miss Barnard of the Department of Business and Engineering Administration: "I didn't think when I wrote to you a few weeks ago about the marriage of Bill Rothen that I would be giving you another chapter concerning him so soon. It is a chapter I don't like to give, for it is a sad one — in fact the final one. After a happy honeymoon in Cuba, Bill and his wife, Bobby, were just starting out nicely. He went in heavily for winter sports. Usually it was skiing, but one Sunday they went to the home of another Roche junior executive and tried the latter's toboggan slide. All four went down the first time, and then, probably because of the proverbial feminine intuition, the wives remained at the top. The guide broke; there was a crash in the dark. The other fellow regained consciousness Tuesday morning and is expected to pull out of it. Bill never did come to. After an emergency operation by a brain surgeon early Monday morning

and a transfusion given by his brother, he passed away Tuesday afternoon, March 10. At Roche Park everybody from President Bobst down has been severely jolted. For in the growing personnel, which is now about six hundred and fifty, Bill had pressed ahead as all good Course XV men are supposed to do, and he had made friends with everybody. I have seen quite a few come and go, and I never saw anyone here who had more friends. . . ." — ROBERT J. GRANBERG, *General Secretary*, care of W. C. Voss, 9 Old Town Road, Wellesley Farms, Mass. RICHARD LAWRENCE, *Assistant Secretary*, 111 Waban Hill Road, North, Chestnut Hill, Mass.

### 1936

Julius Caesar had the ides of March, Mark Antony had Cleopatra, Napoleon had Waterloo, but what has the Class of '36? Right — it's the fifth reunion. Now we don't plan to have any tragedies like those of Caesar and Napoleon, nor can we promise any charmers like the famous Egyptian queen, but we do know that it will be a grand opportunity to get together with your old fraternity pals, your dorm roommates, and the boys who once struggled through 8:01 with you. Many of them are engaged in interesting work for the defense program, some are in uniform, still others have traveled through interesting lands and out-of-the-way places. Why deny yourself the chance to swap stories and experiences with your classmates?

The time is the week end of June 7 and 8; the place is near Boston, very likely the Cliff Hotel in Scituate; and the activities will be golf, tennis, swimming, baseball, and, of course, elbow-bending. There are sixty-two now slated to come, and thirty-five more who haven't quite made up their minds. The price is ten dollars a person (maybe less) for the week end, exclusive of transportation. The registration fee is three dollars each. Incidentally, the facilities are not just average at the Cliff Inn; they are really first class.

If any of you readers have not heard the details of this occasion, drop a line to Harry E. Essley, Jr., 2 Sedgwick Road, Cambridge, Mass., and you will receive the news right away, so that you can make plans to be at the reunion with the rest of us. — ANTON E. HITTL, *General Secretary*, 109 Shepard Avenue, Kenmore, N.Y. ROBERT E. SAWYER, *Assistant Secretary*, 55 Robinwood Avenue, Jamaica Plain, Mass.

### 1937

A week ago I stopped in Somerville, N.J., to see Bill Hartmann, IV, who returned from the Orient on Christmas Eve after eighteen months of travel. He had a Rhodes Scholarship. He visited Sweden, Italy, Egypt, Thailand, China, and Japan. I take it from his mother (Bill wasn't home; he is now located in Philadelphia) that he managed to stay one jump ahead of *der Führer* in his European jaunt. That must have kept him really stepping. How about it, Bill?

Al Woll, XV, comes back fast with a note of comment and more of that commodity you and I know as news. The comment is: "It was quite pleasing to see the '37 news in print again. I'll stop complaining on that point. The other point to complain about is that my name was spelled wrong. I may have been a 'Wolf' when I was single, but I've simmered down since my marriage. Tsk, tsk, Win, for shame. When I was on *The Tech* I never spelled your name incorrectly — so there." (Just one of the Jones boys.) The news: "On January 21, I attended an M.I.T. dinner at the University Club of Chicago. There I met Eddie Walsh, X, who is now an engineer for the Atlantic Gelatin Company, a subsidiary of General Foods Corporation. I also met Lou Pepperberg, VI-C, who is an electrical engineer for the Zenith Radio Corporation. He is married and is a pappy.

"Things have been happening lately: Milt Lief, XVI, became engaged to Rose Eleanor Modest of Dorchester, Mass.; F. Robert Lesch, who left us in 1935 to finish chemical engineering at the University of Wisconsin, was recently married to Ruth Cora Rattin of Philadelphia; on January 3, Stan, XVI, and Anne Alice '39, IV, Zemansky became the proud parents of their new model, Lester I. Stan has been made process engineer of North American Aviation, Inc., in their new Dallas plant. Abner White, X-B, has been promoted to the rank of first lieutenant of the procurement division of the chemical warfare service; Charley Chase, XV, has left the Harshaw Chemical Company and believes he can make a greater success by working in his own company near Cleveland; Walter Haight, XV, is still a safety engineer at our company, the Pioneer Asphalt Company, and has been transferred from Cleveland to Detroit. . . . Phil Short, X-B, since leaving the Shell Development Company at Emeryville, Calif., has secured a position as radiographer with the Bethlehem Steel Company, shipbuilding division, Fore River yard, Quincy, Mass. Frank Tibbetts, III, is the chief radiographer there. Phil wrote that he was draftee number 499 and filled out the old questionnaire, but he has been found to be a necessary cog and therefore was put in class II-A. . . . Win, do me a favor and make sure my name goes into print soon so that Leo Moore, XV, will know that I am very much alive. Leo sent me a beautiful card last Christmas and signed it, 'I hear you're dead!'"

Thanks, Al, but now Arthur M. York is beating on my mailbox for recognition, so we'll turn the ink over on — or rather, I mean, to him: "I'll have to admit I've been particularly lax about contributing my bit to the class notes. But after reading Al Woll's crack in the March issue that he didn't know where I was — in New York or Pennsylvania — I decided it was high time to bring him and others up to date. The state is Pennsylvania; the city, Pittsburgh. I've been here since last June, when I became a publicity writer for the Westinghouse Electric and Manufacturing Company — 'the name that means every-

1937 Continued

thing in electricity.' [Advertisement?] I'm tickled pink with the job and look forward to a rosy future. (Some color scheme, eh?) I'm concerned with the preparation of material for the newspapers throughout the nation on happenings at Westinghouse. This work covers such subjects as research progress, engineering developments, speeches of important officers, personalities, promotions, awards, and so on. Although I spend most of my time at the company's headquarters in East Pittsburgh, I get frequent trips to plants in Derry and Sharon, Pa., Cleveland and Mansfield, Ohio, and occasionally to New York. This gives me an interesting picture of the company as a whole. I find Pittsburgh a dirty city but a friendly one. Right now, of course, with national defense production as a keynote, the city is at the height of an industrial bustle. I'm still single, but it wouldn't be safe for anyone to bet on my holding out much longer."

May I interpose here, Art, with the comment that you are not alone in that respect. In fact Jim Agnew and Elizabeth Wurst of Holland, N.Y., have announced their intentions, as have also Richard Stoiber and Edna Howley of Cambridge, Mass. But, Art, you have more to say: "Another correction to Al Woll's report is that Bill Penn is no longer at his father's pharmacy. For several months he's been doing chemical research at the Lynn, Mass., plant of the General Electric Company. This reminds me, Len Seder left the bachelor ranks on January 12, when he went into partnership with Annette Ames, Simmons '39. As you may recall, Len is also in research at General Electric's Lynn plant. He is now the head of a section there."

"Dick Fowler is also with Westinghouse here in Pittsburgh. I run into him occasionally but not often enough to keep posted on his doings. I've been to one meeting of the M.I.T. Club of Western Pennsylvania and saw Paul Des Jardins '38 there." — Thanks very much, Art. That letter, as you know from your experience on *The Tech*, will certainly help to fill the yawning cavern of class curiosity.

Do you want to see your name in print? If so, send ten cents in coin and the top of the Institute dome, and I'll be crushed.

Bob Fischel, XVI, let the cat out of the bag with what we suspected all along. I have debated with myself for some time as to whether I would give him away. Even now I fear the consequences from the chamber of commerce because: "The eternal rains have hit southern California." Bob, can I offer you a hideaway here in Jersey? Seriously though, his life seems very interesting, as he goes on: "Life out here has been one ski trip after the other, now that there's plenty of snow in the mountains. It takes about forty-five minutes by car to get into the snow from here (1050 Hillcroft Road, Glendale), so I've been going at every opportunity. About every second week end a group of us from the house drive up into the Sierras about three hundred miles for two days of skiing. The slopes

there are about as good as the ones in Switzerland, so it's really worth the trip."

"Norm Robbins was up from San Diego recently, and we spent a quiet time around here. We did a little skiing and played a little bridge with Pappy Pitkin. Norm is working on a night shift at the Consolidated Aircraft Corporation and has been made an assistant project engineer. Give my best regards to Alice and to the rest of the gang in the East and especially around New York. Here's hoping I'll be able to see you all this June." — Here's hoping, too. You fellows know by this time that Alumni Day is on June 9, and we should get in practice for next year's fifth reunion.

"I just got my March Review and saw the swell write-up you gave my letter," beams Hughie Smith, II. "Things happen fast with me, however, and since that letter the situation has changed a bit. I am no longer in Philadelphia but instead have moved to Rochester, N.Y., where I am now an industrial engineer for Eastman Kodak Company at their Kodak Park works. The change happened very suddenly, as you will realize; also, one other statement in the letter is no longer correct. I was planning to be married on May 24, but because of my leaving town and worrying about how lonesome I was going to be, I decided to get married earlier. We were married on February 8 near Philadelphia. My wife's name is Nancy Elizabeth. Her last name used to be Miles, but is now Smith, naturally. She is a nurse and has already found work in Rochester. I hope this will clear things up for a while. Drop in sometime at 69 Electric Avenue, Rochester; we're usually there." — That makes two in Rochester. Vic Kron, II, you remember, is studying medicine at the University of Rochester.

Rupert Lewis, who holds forth at the Cornell-Dubilier Electric Corporation in Plainfield, N. J., has been attending some of the meetings of the M.I.T. Club of Northern New Jersey. The latest meeting was the P.O.N. beer party. "Had rather looked forward to seeing you and some of the other boys," he says. "The ones I did see were Roy Smith, who is still with the Federal Shipbuilding and Dry Dock Company; Max Gerson of Worthington Pump and Machinery Corporation; Ed Hobson of the Bakelite Corporation; and Jack Booton and Jerry Salny of the Barber Asphalt Corporation. I heard recently from a mutual friend that Jerry was expecting to go into the Army."

"Bob Vogeler is in Indianapolis at 6211 College Avenue and is the very proud father of a most remarkable son, who was a year old on March 20. Bob has become a bit of an authority on high-fidelity radio and was able to sell me a very fine amplifier so that I, in turn, can spend my money on records. Frequency modulation certainly sounds swell, though, through my equipment. I am still at the same place and have but little to contribute to your column. Les Johnson is still living in Plainfield, and I see him rather frequently. We are both

still single and beginning to wonder what percentage of our classmates have been married, divorced, become parents, died, or are still living." — Those statistics could be prepared, and perhaps sometime when I have a month or two to spare I can get them out. Another increment to the married contingent is Aug Schilling, IX-B, who was married to Frances Penoyer of New York. A statistic which I can't ignore is that the address of Stanhope Ficke is now unknown by both the Institute and me. Where are you, Stan?

Dick Young supplied the necessary design data for us to complete the picture of the growing Young family. Richard Carlyle, born on November 29, tips the scales at six pounds, four ounces. — See you next month, fellows. In the meantime don't forget Alumni Day, June 9. — WINTHROP A. JOHNS, *General Secretary*, Route 1, Belle Mead, N.J.

## 1938

On March 29, Dick West was married in Evanston, Ill. The bride was Betty H. Lingle of that city. After all his wanderings, it looks as if it took a home-town girl to tie Dick up. — The marriage of Allan Schorsch to Carol Ann Tilles of New York took place on March 5. Also, we learn of the arrival in Camden, N.J., of Newton LeRoy Hammond, 3d.

Art Gould is a lieutenant and assistant works manager at the Springfield Armory. He is head of a production division of some sixteen hundred men. Another Army man is Sam Steere, who is at the Edgewood Arsenal in Maryland. Johnny Cook just missed the call when they discovered he was a big steel mogul. — Bob Reed is now at the Fore River yard of the shipbuilding division of Bethlehem Steel Company. Bill Preston is probably having his share of labor troubles at the International Harvester Company in Chicago.

Emmett Ryder, who has been having great success with his orchestra in the college towns of Colorado, is planning to go to work for Remington Arms Company, Inc., at the new plant they are building in Denver. Doug Esperson is with William R. Warner and Company in New York. We hear he is doing research on lipstick. Let us know what you find out, Doug; our sampling opportunities in this field are too limited. — Bob Gordon is still in the Boston area. He is working with a producer of advertising novelties in Brookline.

Remember Alumni Day, June 9. And how about sending in some news about yourself so we can really turn out a column? — DALE F. MORGAN, *General Secretary*, 6 Avon Road, New Rochelle, N.Y. RICHARD MUTHER, *Assistant Secretary*, 180 Elgin Street, Newton Centre, Mass.

## 1940

Recently I received a telegram from Val deOlloqui saying that he was to be in Norfolk for a short while and planned to have dinner with me sometime during his stay there. We were able to have that dinner together, and I must say that he is



1940 Continued

still the enthusiastic person we knew back at school. Val is now an ensign on the U.S.S. *Wasp*. He was aboard when the *Wasp* made that rescue off the coast not so long ago. Without fear of exposing Navy secrets, I might also add that the *Wasp* left port in Norfolk a few days after our dinner. I might cover up some of the inefficiency of this writer by referring you to the United States Navy for any further details as to destination, plans, and so on. Phil Morgan, Harry Sedgwick, and Val had a grand get-together on behalf of Technology and Course XIII in Norfolk.

Joe Jeffers wrote me that the call to the Army came in December and that he reported on January 12. Joe says that he'd like to have a list of fellows from the Class who have been called into the service either as officers or draftees. "Why not publish the names and stations in The Review? I, for one, would be very much interested in such a list." Any more such ideas from you '40 men? If so, let me hear from you, and if you find time to write me, do it for the good of your conscience as well as for the Class. Bill Taylor is at Fort Knox with Joe. John McMullen and Paul Bollerman were last heard of at Aberdeen Proving Ground, Md. We understand from Joe that Phil Stoddard is "somewhere in the service."

While we are on the subject of Aberdeen, Md., I should add that I've heard from Kenneth Lish and Bernie Carver, both of whom are located there now. Kenneth writes that he is a junior engineer in the plants division of Edgewood Arsenal, that division being responsible for the design of all chemical warfare manufacturing plants. He spoke of having seen both Bollerman and McMullen. Dick Hutzler, when last heard of in November, was located at a naval aircraft factory in Philadelphia, according to Kenneth.

Bernie Carver wrote that he spent the summer and fall doing real estate maintenance and management in Boston. Parts of his letter follow: "I was married on October 13 to Frances Man (Wellesley, 1940) from Scranton, Pa. The wedding took place at the Astor Hotel in New York City, and we spent our honeymoon on a motor trip to Virginia. Later I took a junior engineer civil service examination and got a job working for the War Department. I started a two

months' training period on February 3 at Aberdeen Proving Ground, Md. Here we are becoming familiar with the technique of testing guns and ammunition. After the training period I will be stationed at the Jefferson Proving Ground in Madison, Ind., where my work will be as proof director in charge of trench warfare."

Through Bernie Carver I also learned that Harold Miller took the ten weeks' course in aeronautical engineering at the Institute last summer and then went to work for the Curtiss-Wright Corporation in Buffalo. Since that time he has taken a job as a junior engineer with the War Department and is working from the signal corps office in New York City. His job consists of inspecting signal corps equipment at the contractor's plant. At present he is in Worcester, Mass., inspecting leather cases for telephones.

Indirectly I've heard that the Marshall D. McCuens became the proud parents of a baby boy, David Charles, in February. — Janet Davidson and Nils M. Rosenberg of West Allis, Wis., were married on March 15 at the home of the bride's parents in Montclair, N.J. Charles Godfrey was best man at the ceremony. The couple plan to live in Milwaukee, as Rosenberg is located with the Allis-Chalmers Manufacturing Company there.

From Dudley Follansbee I heard of Herb King, about whom I wrote in the March Review. Dud also writes: "Sammy Goldblith, one of the biology and public-health boys, is working with Arthur D. Little, Inc., in Cambridge, probably continuing his vitamin research. I had a letter a few weeks ago from Mac McConville, who is working in the Rio Grande Valley for the Crown Can Company. He tells me that alcoholic beverages are at a very low premium and recommends most highly a Mexican drink called *tacquilla* as a good starter for a 'scientific bat.' It is rumored that Leo Eisman is working with the St. Louis health department. Occasionally I see Warren Francis, who is working out here with Procter and Gamble. Dave Johnstone, VII-B, is working here with me trying to put his eastern technique to some avail in making mid-western baked beans." Just what that implies you'll have to find out from Follansbee. Dud is with the Kroger Grocery and Baking Company in Cincinnati, Ohio.

A very interesting letter arrived from Bob Bittenbender, and especially you fellows who remember Jorge Echarte will be interested. Most of Bob's letter follows: "I don't seem to remember whether I wrote you that I heard from the mad Cuban or not, so I'll try to tell you about it. As you can imagine, it was quaint; the spelling was marvelous, for example, 'construccion.' He is quite happy, he says, working mornings for the government and designing an aqueduct in the afternoons — a small aqueduct, but nevertheless an aqueduct. I was relieved to hear that the Cubans will protect us from the 'bouches' (Germans). He seemed very steamed up about the situation, too. Perhaps the highlight of his profound statements will be found in his lengthy discourse on the fairer sex. I quote: 'I have nothing to complain; the women situation is honky-dore; — high supply, low demand, see what I mean?'"

"Some of the boys were back at Tech the other day and I guess the place exists without us. — We have succeeded in getting some skiing done on some glorious hills in central New York. Ah, to be able to throw such worldly things as work to the winds and slide around on the bed slats every week. I guess  $f=My/I$  will keep me in its clutches though. The approximations Eugene Mirabelli '19 [Associate Professor of Civil Engineering], made were nothing to what we do now. I'm just crazy about the work, especially putting to use the structures we think we learned in our senior year."

And now comes the time for your Secretary to wonder some more about such fellows as Frank Penn, Henry Rapoport, and Herb Hollomon, all Course Secretaries from whom I've not heard a word as yet. And what has become of F. J. Crimmins, Ben Bosher, and Bob McDonnell?

In fact, what has become of the enthusiastic Class that was graduated just about a year ago? Many of you have forgotten that there is still a Class and that there is still work to be done. You can help by sending me a short letter, a post card, or a long letter, as you feel inclined. Please do feel inclined. — H. GARRETT WRIGHT, *General Secretary*, 324 57th Street, Newport News, Va. DAVID T. MORGENTHAU, *Assistant Secretary*, The Graduate House, M.I.T., Cambridge, Mass.

# Revere Copper and Brass Incorporated

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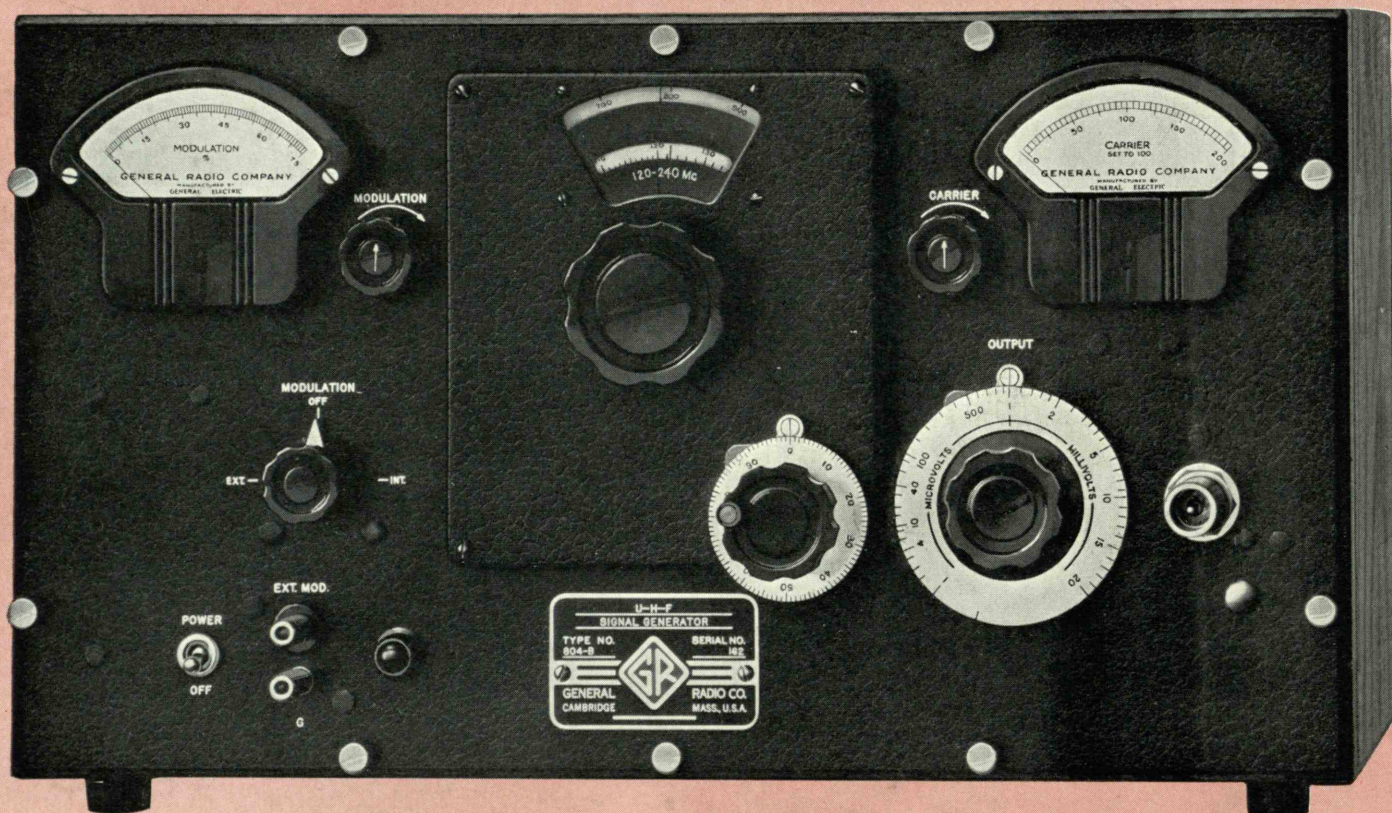
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